

C776i Stairclimber

Warning: This service manual is for use by Precor trained service providers only. If you are not a Precor Trained Servicer, you must not attempt to service any Precor Product; Call your dealer for service.

This document contains information required to perform the majority of troubleshooting, and replacement procedures required to repair and maintain this product.

This document contains general product information, software diagnostic procedures (when available), preventative maintenance procedures, inspection and adjustment procedures, troubleshooting procedures, replacement procedures and electrical block and wiring diagrams.

To move directly to a procedure, click the appropriate procedure in the bookmark section to the left of this page. You may “drag” the separator bar between this page and the bookmark section to change the size of the page being viewed.

Section One - Things You Should Know

About This Manual

This manual is written for you, the C760 Series Climber service technician. The objective of this service manual is to provide you with the instructions you need to maintain, inspect and adjust C760 Series Climbers, troubleshoot malfunctions, and remove and replace components. This manual includes the sections and appendices described in the following paragraphs.

Section One, Things You Should Know. This section includes warning and caution statements, safety guidelines, and a list of required tools and equipment. It is highly recommended that you read this section, as well as the *C776i Climber Owner's Manual*, before performing the maintenance procedures provided in this manual.

Section Two, Software Features. The C776i Climbers are programmed with several diagnostic and setup features. This section contains the procedures you need to access these features.

Section Three, Preventive Maintenance. This section provides regular (scheduled) maintenance activities that should be performed to keep the C776i Climbers in peak condition.

Section Four, Checking Unit Operation. This procedure provides you with a quick way of checking the climber operation. Check the climber operation at the end of a maintenance procedure and when it is necessary to ensure that the climber is operating properly.

Section Five, Inspection and Adjustment Procedures. Perform inspection procedures when a trouble symptom points to a particular problem and after removing and replacing major components. Many maintenance problems can be fixed by adjusting various climber components. This section provides you with the step-by-step procedures required to make these adjustments.

Section Six, Troubleshooting Procedures. The diagnostic and troubleshooting procedures contained in this section should be performed when it is necessary to isolate a problem to a particular component.

Section Seven, Replacement Procedures. When a C776i Climber component must be replaced, go to this section and follow the step by step instructions required to remove and replace the malfunctioning component.

General Information

For the latest exploded view, part number and part pricing information, visit the Precor dealer website at "www.precor.com/connection".

Miscellaneous Information

Right, Left, Front, and Back Conventions

In this manual, right, left, front, and back are from the perspective of a user standing on the climber, facing the display enclosure.

Anti-Static Handling Procedures

The C776i Climbers contain some static-sensitive devices. Wrist straps dissipate static before it can damage static-sensitive devices you are servicing. Follow anti-static handling procedures and wear an anti-static device (such as a wrist strap) when you perform this procedure.

Wrist straps are made for static control. They will neither reduce or increase the risk of electrical shock when using or working on electrical equipment. When you wear a wrist strap, follow the same precautions you would use if you were not wearing a wrist strap.

Warning, Caution Statements and Safety Guidelines

WARNING and **Caution** statements are used throughout this manual to protect both you and the C776i Climber. Additional precautions and guidelines are provided to ensure your safety when servicing an C776i Climber.

WARNING statements indicate a particularly dangerous activity. **WARNING** statements you will find in this manual include:

- To remove power from the C760 Series Climber, the power cord must be disconnected from the wall outlet.
- Removing the covers exposes potentially dangerous machinery and high voltage components. Use caution when performing maintenance operations with the covers off.
- While performing this procedure, you will be very close to high voltage components. Protect yourself by removing jewelry (especially from ears, neck, and hands), tying up long hair, and removing neck ties.
- If the climber is left in Calibration Mode for over 30 minutes, the magnet will become very hot and the lower PCA may fail. Allow the magnet to cool by removing power from the climber and waiting four hours with the covers off before you perform maintenance operations or operate the climber.
- If the user's heart rate has reached or exceeded the maximum heart rate. The user **MUST** consult a physician before operating the C760 Series Climber.

Caution statements are intended to prevent damage to the C760 Series Climber as a result of the current activity. Caution statements included in this manual are listed below:

- Remove power from the climber before you measure the resistance of the magnet.
- Notice the orientation notch on the PROM (U3). The new PROM must be positioned with the same notch orientation. Replacing the PROM backwards will damage or destroy the PROM.
- Insert the new PROM carefully. Take care not to bend the legs of the PROM.

Safety guidelines you should know and follow include:

- Read the Owner's Manual and follow all operating instructions.
- Operate C776i Climbers on a solid, level, dry surface.
- Visually check the C776i Climber before beginning service or maintenance operations. If the climber is not completely assembled or if it is damaged, exercise extreme caution while operating and checking the C776i Climber.

- Keep all electrical components, such as the power cord and the ON/OFF switch, away from water and other liquids.

Required Tools and Equipment

The following list is a summary of the tools and equipment required by the procedures in this manual. We recommend that you have this equipment available when you service C760 Series Climbers.

TOOLS

#2 phillips screwdriver
#2 flat-head screwdriver

1/8", 5/32", and 3/16" allen wrenches

3/8", 7/16", 1/2" (2), 3/4", and 17mm (2)
open end wrenches

1/2" drive socket wrench set
chip puller
feeler gauge (0.030")
feeler gauge (0.050")
needle nose pliers
pliers
snap ring pliers

EQUIPMENT

anti-static wrist strap
ohmmeter
voltmeter

blue loctite
cable ties
damp cloth
mild detergent
tape

Procedure 2.1 - Determining Software Version and Total Floors Climbed

Software version numbers are invaluable for tracking and identifying problems and staying aware of changes to the operation and features of the product.

Procedure

Note: In order to perform this procedure the climber must remain in the “powered up” condition. It is necessary to use the climber in order to keep the climber in the “powered up” condition, unless the climber is equipped with an optional external power supply.

1. With the climber “powered up”, press keys **RESET**, **6**, **5**, sequentially.

Diagram 2.1 - C776i Console



2. The message **INFORMATION DISPLAY** will be displayed for two seconds and then **ODOMETER** for two seconds. The total number of floors climbed will be displayed as **XXX FLOORS**. Press the **ENTER** key to continue to the total time display.
3. The message **HOURMETER** will be displayed for two seconds. The total hours of use will then be displayed as **XX HOURS**. Press the **ENTER** key to continue to the software version display.

4. The message **SOFTWARE VERSION** will be displayed for two seconds and then **UPPER APP XXXX-XXX**. Press **▼** or **▲** key to toggle display between the upper boot software version, lower software version and the upper app. software version. Press the **ENTER** key to continue to the error log.
5. The message **ERROR LOG** will be displayed followed by the error in log position 1. Each log entry shows the log position, the floor count when the error occurred and the hour meter when the error occurred. For example; **1 ER05 123456 FLR 45678 HRS**. The error log can record up to ten error conditions. The error code in position one will be the most recent error and the error in position ten will be the oldest error. If more than ten errors have been logged, only the ten most recent will be displayed. When a new error is logged, the oldest error will be deleted from the log. Use the **▼** and **▲** keys to move through the log. Pressing and holding the **QUICK START** key for four seconds will clear the log. Press the **ENTER** key to advance to the serial number display.
6. The message **SERIAL NUMBER** will be displayed for two seconds and the serial number will be displayed. Press the **ENTER** or **RESET** key to exit.

Procedure 2.2 - Performing Keypad and Display Diagnostics

Procedure

Note: In order to perform this procedure the climber must remain in the “powered up” condition. It is necessary to use the climber in order to keep the climber in the “powered up” condition, unless the climber is equipped with an optional external power supply.

1. With the climber “powered up”, press keys **RESET, 5, 1, 7, 6, 5, 7, 6, 1**, sequentially.

The C776i diagnostic software cycles through the following tests:

- Display Test
- Keyboard Test
- Heart Rate Test
- Battery Test
- Step Test
- Brake Test

Procedure.

2. The message **HARDWARE VALIDATION** will be displayed for a few seconds.
3. The message **DISPLAY TEST** will be displayed followed by every LED on the display being illuminated. Check each LED segment to ensure that all of the segments are illuminated. Press the **ENTER** key to advance to the keyboard test.
4. The message **KEYBOARD TEST** will be displayed followed by a graphical representation of each key position on the display housing. As each key on the display is pressed the key representation is turned “off”, indicating that the key is functioning. Check each key in this manner, including the numeric keyboard. Press and hold the **ENTER** key for 2 seconds to advance to the heart rate test.
5. The message **HEART RATE TEST** will be displayed followed by the unfiltered (U), filtered (F) and polar (P) heart rate readings if the heart rate option is installed in the C576i and a chest strap transmitter or a test transmitter is being used. If the heart rate option is not installed in the C576i, the message **NO HEART RATE RECEIVER** will be displayed instead of the heart rate readings. Press the **ENTER** key to advance to the battery test.
6. The message **BATTERY TEST** will be displayed followed by the battery voltage. Press the **ENTER** key to advance to the step test.
7. The message **STEP TEST** will be displayed followed by the pulse (power bit) reading and the SPM (steps per minute) reading. Press the **ENTER** key to advance to the brake test.

8. The message **BRAKE TEST** will be displayed followed the power bit reading and SPM reading. This test allows you to test the brake (resistance) at each step rate level. Press the **ENTER** key to exit the diagnostics program.

Procedure 2.3 - Selecting Club Settings

Procedure

Note: In order to perform this procedure the climber must remain in the “powered up” condition. It is necessary to use the climber in order to keep the climber in the “powered up” condition, unless the climber is equipped with an optional external power supply.

1. With the climber “powered up”, press keys **RESET, 5, 6, 5, 1, 5, 6, 5**, sequentially. The message **SET CLUB PARAMETERS** will be displayed for a few seconds.
2. The message **SELECT LANGUAGE** will be displayed followed by the currently selected language. Use the **▼** and **▲** keys to select the language preference. Press the **ENTER** key to advance to units of measurement.
3. The message **SELECT UNITS** will be displayed followed by the currently selected unit of measurement. Use the **▼** and **▲** keys to select either **U.S. Standard** or **METRIC** measurements. Press the **ENTER** key to advance to maximum workout time.
4. The message **SET MAX WORKOUT TIME** will be displayed followed by the currently selected maximum workout time. Use the **▼** and **▲** keys to select the maximum workout time. The maximum workout time may be set between 1 and 240 minutes or no limit. Press **ENTER** to advance to maximum pause time.
5. The message **SET MAX PAUSE TIME** will be displayed followed by the currently selected maximum pause time. Use the **▼** and **▲** keys to select the maximum pause time. The maximum pause time is the that will elapse after the pause key has been pressed until the unit resets. The maximum pause time may be set between 1 and 120 seconds. Press **ENTER** to advance to set cool down time.
6. The message **SET COOL DOWN TIME** will be displayed followed by the currently selected cool down time. Use the **▼** and **▲** keys to select the cool down time. Cool down time is the period of time following the completion of a program for the user to cool down at a reduced work rate. Press **ENTER** to advance to modify custom programs.
7. The message **MODIFY CUSTOM COURSE 1** will be displayed. The modifications instructions will then be displayed. Press **ENTER** to save custom course modifications and to exit club settings program.

Procedure 2.4 - Documenting Software Problems

When a problem is found with either the software or upper or lower PCA's, record the information listed below. If you isolate the problem to either the PROM, upper PCA, or lower PCA, include the information you recorded with the malfunctioning PROM or PCA when you ship it to Precor Customer Service.

When a problem occurs, record the following information:

- Model and serial number
- Software version number

Note:

Determine the version number of the PROM mounted on the upper PCA as described in Procedure 2.1 or by looking at the label on the PROM.

- User and program number running when the problem occurred
- A description of:
 - a. What happened or failed to happen
 - b. The action taken by the user just before the problem occurred
 - c. Problem-related information (such as how far into the program the problem occurred, the work level being used when the problem occurred, etc.)
- The frequency of occurrence.

Procedure 2.5 - Software Uploading Procedure

This unit utilizes an upper PCA software system that is capable of on site upper PCA software uploading (re-programming). The software upload may be accomplished with the use of a PDA (palm device) or a laptop computer.

If a palm device is to be used it must use OS software version 3.2 or higher. Currently, we have only tested devices manufactured by Palm, but other manufacturer's palm devices may also function correctly.

If a palm device is to be used, the appropriate software must be available in the palm device. A PDA containing the appropriate software may be ordered from Precor or it may be downloaded to the PDA from your desktop or laptop computer via the "hot sync" function. With the PDA inserted in the hot sync cradle, download to "Precor IFP" (in field programmer) directory.

If a laptop computer is to be used, the computer's DB9 serial port will be used for the upload.

Upload Procedure

1. The EFX must be "powered down" before the upload procedure can be initiated. Ensure that the EFX has not been used for a sufficient time to allow the lower PCA to completely discharge. The light emitting diode on the lower PCA will go out when the power supply is discharged.
2. If the CSAFE port is in use, temporarily disconnect the RJ-45 cable from the CSAFE port. If the CSAFE port is not in use, temporarily remove the plastic plug from the CSAFE port.
3. Connect the PDA or computer interface cable to the CSAFE port.
4. Select the software file to be uploaded on the palm device or computer.
5. Start pedaling the EFX or power up using the external power supply. When the EFX "powers up" the upload will commence. You must continue to pedal until the upload is complete, approximately 2 minutes.
6. Stop pedaling or disconnect the external power supply when the upload is complete, and allow the lower PCA to completely discharge. The light emitting diode on the lower PCA will go out when the power supply is discharged.
7. Start pedaling the EFX, after it has been allowed to power down, the EFX will now be operating on the newly uploaded software.
- Thoroughly, check the EFX's function per Section Four.

Section Three - Preventive Maintenance

Preventive maintenance measures are either scheduled (performed on a regular basis by the owner) or unscheduled (performed when you make a service call). Maintenance performed by the owner is limited to cleaning and visually inspecting the climber and making the adjustments specified in the C760 Series Owner's Manual. Scheduled preventive maintenance activities are included here so that you are aware of preventive measures performed on a regular basis.

Regular Preventive Maintenance (Owner)

Cleanliness of the C776i Climbers and their operating environment will keep maintenance problems and service calls to a minimum. For this reason, Precor recommends that the following preventive maintenance schedule be followed.

At the End of Each Day

- Wipe down the stair arms and frame with a damp cloth.

Every Week

- Wipe the surface of the electronic console with a barely-damp sponge or soft cloth. Dry with a clean towel.
- Vacuum underneath the climber, following these steps:
 - a. Turn off the climber with the circuit breaker, then unplug the power cord from the wall outlet.
 - b. Place the climber on one side (either side will do).
 - c. Vacuum the rug or "damp mop" the floor.
 - d. Make sure that the floor is dry before returning the climber to an upright position.

On-Site Preventive Maintenance (Service Technician)

Perform the following preventive maintenance tasks each time you are called to service a C760 Series Climber:

- Examine the belts, sheaves and bearings for wear, cracks, or other signs of deterioration and replace if necessary.
- Visually inspect the power cable harness. Replace the power cable harness if it is torn or damaged.

- Check the LED's mounted on the upper PCA and the function keys displayed on the electronic console by performing Procedure 2.2.
- Visually examine all wires and check connectors and wire connections. Secure connections and replace wiring as necessary.
- When the covers are removed, visually inspect the lower ribbon cable and the part of the upper ribbon cable that is not inside the column. If either ribbon cable is torn or damaged, replace it as described in Procedure 7.XX.
- Inspect the stairarm and drive belts. If the belts show signs of wear or damage, remove and replace the belts as described in either Procedure 7.XX and Procedure 7.XX.

Section Four - Checking Unit Operation

This section provides you with a method of checking climber operation. Check climber operation at the end of a maintenance procedure and when it is necessary to ensure that the climber is operating properly.

Procedure

1. Start "stepping" on the climber. When the **Precor** banner prompt appears, press **QUICK START**.
2. Operate the climber 4–5 minutes. As you operate the climber:
 - a. Concentrate on the resistance of the climber and the sound of the stair arm belts and return springs as you pedal. Be on the alert for unusual rubbing, hitting, grinding, or squeaking noises
 - b. Press the Change keys. Verify that various information displays are functioning.
 - c. Make sure that the stair arm belts do not rub on the cover.
5. If you feel no resistance as you step, if the climber makes unusual noises, or the electronic display does not change appropriately...

THEN...

Refer to Section XX

OTHERWISE...

Continue with the next step.

6. Press the **STEP RATE ▲** key until you reach Step Rate 60 (60 steps per minute). Operate the climber for another 2–3 minutes.
7. If the climber resistance does not change or the climber operation feels inconsistent compared with Work Level 1...

THEN...

Refer to Section XX

OTHERWISE...

Continue with the next step.

8. Press the **STEP RATE ▲** key until you reach Step Rate 90. Operate the climber for another 2–3 minutes.
9. If the climber resistance does not change or the climber operation feels inconsistent compared with Step Rates 30 and 60...

THEN...

Refer to Section XX.

OTHERWISE...

Continue with the next step.

10. Check the LED's mounted on the upper PCA and the function keys displayed on the electronic console by performing Procedure 2.2.

Procedure 5.1 - Inspecting the Stairarm Belts

1. Remove the left and right hand cover sections per Procedure 7.1.
2. Grasp the stairarm return spring and carefully remove it from its mounting peg. See Diagram 5.1.

Diagram 5.1 - Stairarm Return Spring

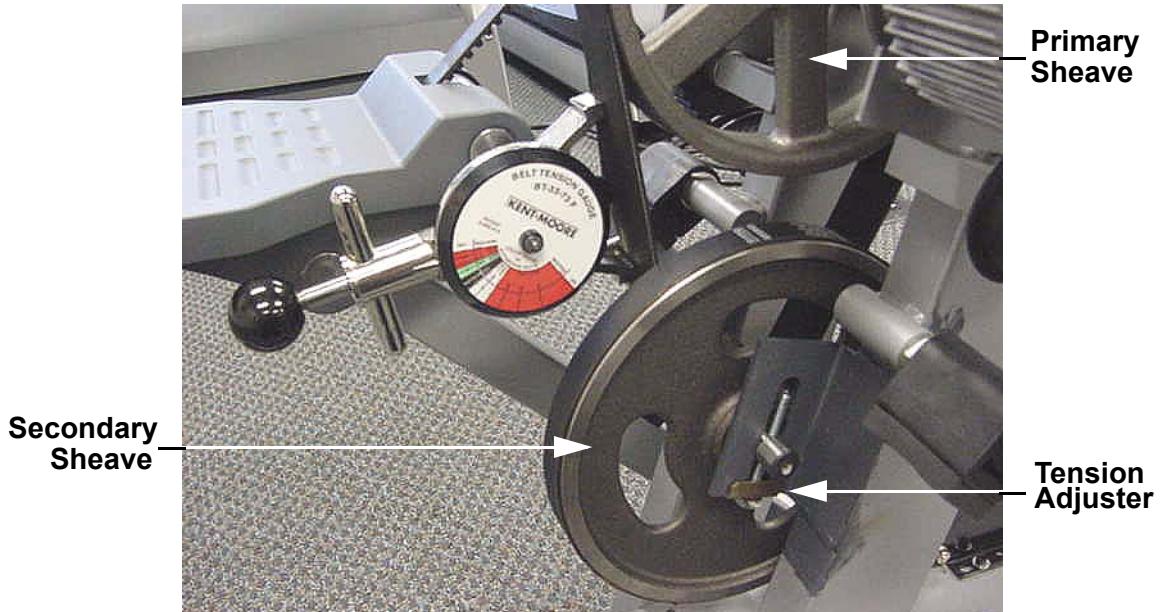


3. Support the stairarm and remove the stairarm belt from both flanged pulleys and the HTD pulley.
4. Lower the stairarm and inspect the stairarm belts for cracks, worn areas and missing teeth.
5. If required, replace the belt per Procedure 7.6.
6. Wrap the stairarm belt over the HTD pulley, behind and under the upper flanged pulley. Wrap the belt under and around the lower flanged pulley. Then lift the stairarm and hook the return spring on its mounting peg. Check the belt to ensure there are no twists in the belt. If there are remove the return spring from its mounting peg and rotate the return spring to remove any twist. Hook the return spring on its mounting peg.
7. Replace the left hand and right hand cover sections per Procedure 7.1.

Procedure 5.2 - Checking Drive Belt Tension

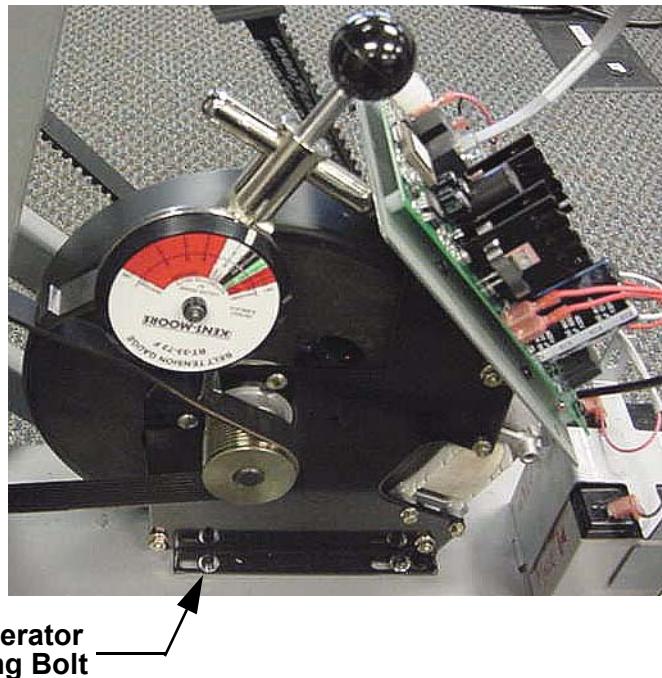
1. Remove the left hand, right hand and rear cover sections per Procedure 7.1
2. Place the belt tension gauge on the primary (wide) drive belt as shown in Diagram 5.2. The gauge should read approximately 100 pounds.

Diagram 5.2 - Check Primary Drive Belt Tension



3. If necessary, adjust the primary drive belt tension using the two tension adjusters (one on each side of the secondary sheave) until the tension gauge reads approximately 100 pounds. There are locking tabs on the tension adjusters that must be straightened in order to turn the adjuster bolts. See Diagram 7.7. Bend the tabs back into the locking position when the belt tension adjustments are complete.
4. Changing the tension of the primary drive belt will affect the generator belt tension. If the tension was primary drive belt tension was changed in step 3, continue with step 5.
5. Place the belt tension gauge on the generator (narrow) belt as shown in Diagram 5.3. The belt gauge should read approximately 80 pounds.
6. Loosen but do not remove the four generator mounting bolts. Using the slots in the frame and a flat metal bar as a lever, move the generator forward or backward as required to set the belt tension at 80 pounds and torque the four generator mounting bolts to 40 inch pounds.
7. Replace the left hand, right hand and rear cover sections per Procedure 7.1.

Diagram 5.3 - Generator Belt Tension



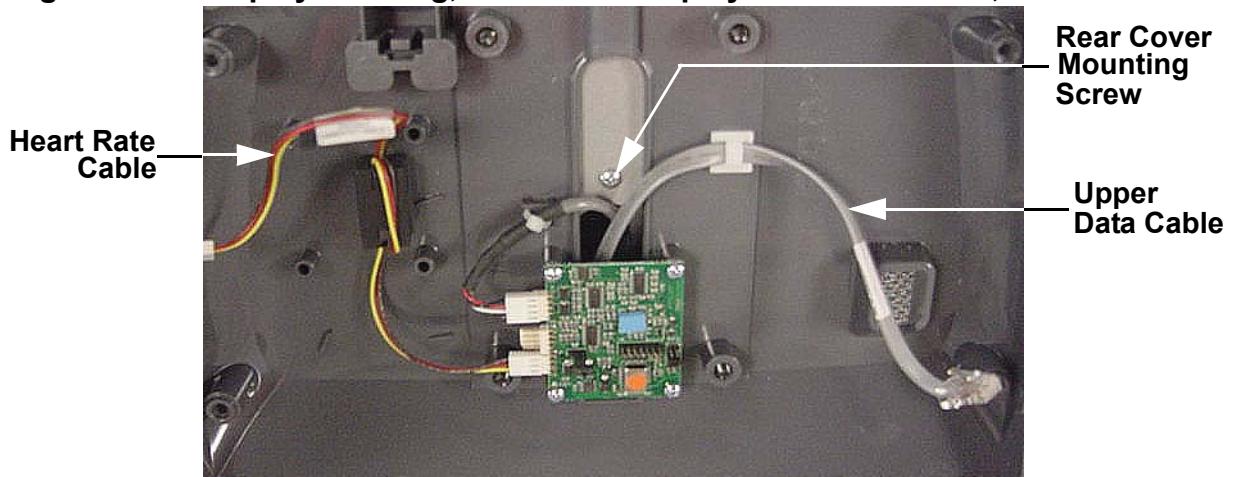
**Generator
Mounting Bolt**

Procedure 6.1 - Troubleshooting the Lower and Upper Data Cables and Mid-Point Connector

Troubleshooting the Upper Data Cable

1. Remove the four screws from the rear of the display housing that fasten the display front panel to the display housing. Carefully, lift the display front panel off of the display housing and disconnect the heart rate cable and upper data cable from the upper printed circuit assembly. See Diagram 6.1.

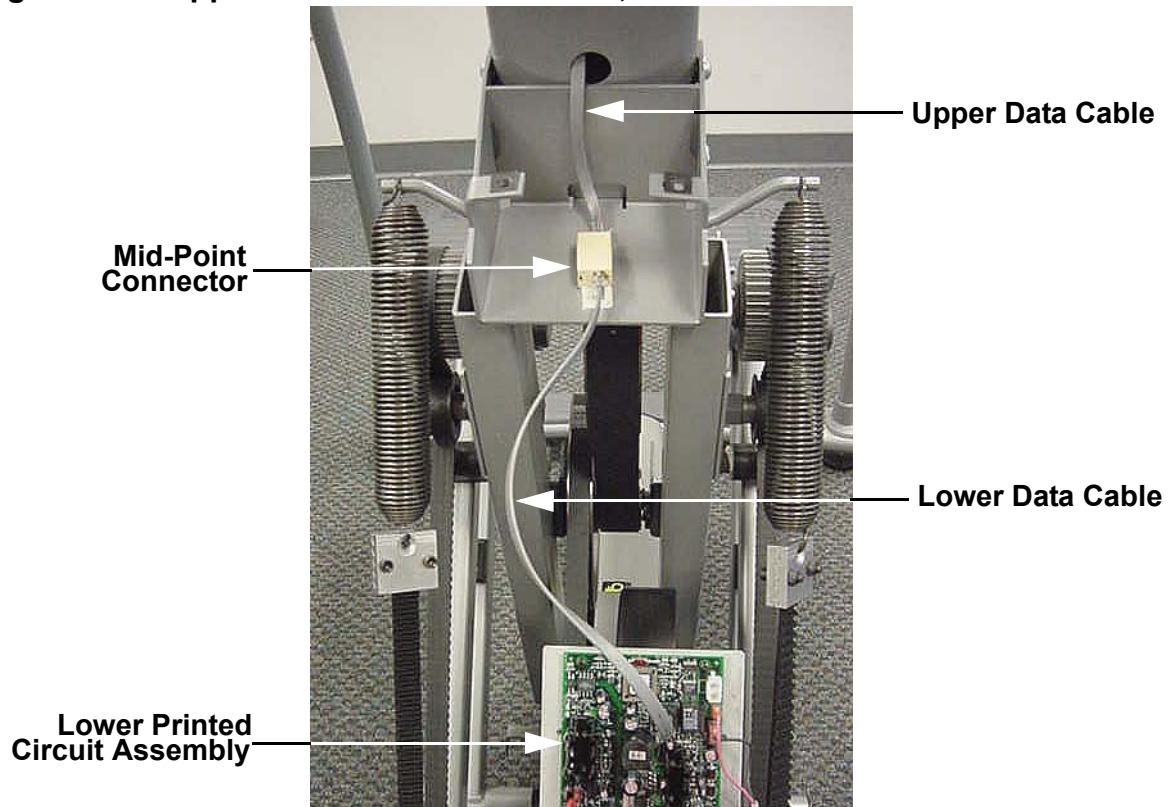
Diagram 6.1 - Display Housing, with Front Display Panel Removed,



2. Remove the left hand and right hand cover sections per Procedure 7.1.
3. Disconnect the upper data cable from the mid-point connector. See Diagram 6.2.
4. Connect a known good data cable from the upper printed circuit assembly to the mid-point connector.
5. If the C776i now functions correctly, replace the upper data cable per Procedure XX. If the C776i still functions incorrectly, replace the original upper data cable and continue with step 6.

Troubleshooting the Lower Data Cable

6. Connect a known good data cable from the lower printed circuit assembly to the mid-point connector. See Diagram 6.2.
7. If the C776i now functions correctly, replace the lower data cable per Procedure XX. If the C776i still functions incorrectly, replace the original lower data cable and continue with step 8.

Diagram 6.2 - Upper and Lower Data Cables, Mid-Point**Troubleshooting the Mid-Point Connector**

8. Remove the upper and lower data cables from the mid-point connector.
9. Connect the upper and lower data cables to a known good mid-point connector.
10. If the C776i now functions correctly, replace the mid-point connector. If the C776i still functions incorrectly, replace the original mid-point connector. The problem may be caused by another component such as the upper printed circuit assembly or the lower printed circuit assembly. Troubleshoot those component per the appropriate troubleshooting procedure.
11. If all of the above test have been performed and the C776i is still not functioning correctly, call Precor technical support.

Procedure 6.2 - Troubleshooting the Keyboard and Upper PCA

If the function keys on the electronic console are unresponsive, the problem may be either the upper PCA or keyboard. This troubleshooting procedure gives you the information you need to determine which of these components is malfunctioning.

1. Attach the wrist strap to your arm, then connect the ground lead of the wrist strap to the climber frame.
2. If an **ERROR 05** or **STUCK KEY** message is being displayed continue with step 3. Otherwise, skip to step 7.
3. Remove the four screws that fasten the display front panel to display housing.
4. Disconnect the keyboard cable from the upper printed circuit assembly. See Diagram 6.3.

Diagram 6.3 - Keyboard and Upper Printed Circuit Assembly



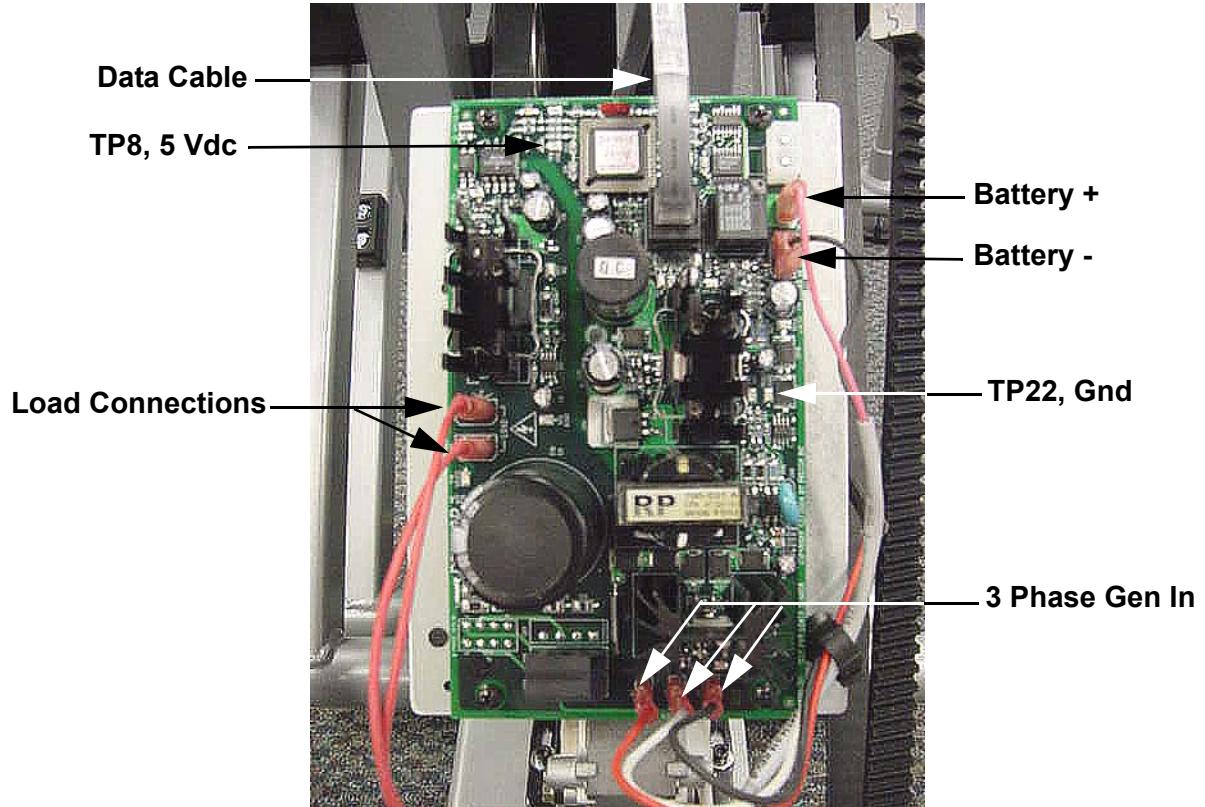
5. Use the C776i, if the **ERROR 05** or **STUCK KEY** message is still being displayed, replace the upper printed circuit assembly per Procedure XX.
6. If the **ERROR 05** or **STUCK KEY** is no longer displayed replace the display front panel (keyboard) per Procedure XX.

7. If a key does not function when pressed, the problem could be the keyboard, the upper printed circuit assembly or the keyboard cable.
8. The easiest means of determining which of the three components is the cause, is to replace them, one at a time, with a known good component.
9. If all of the above test have been performed and the C776i is still not functioning correctly, call Precor technical support.

Procedure 6.3 - Upper Display Does Not Illuminate

1. Remove the left hand, right hand and front cover sections per Procedure XX.
2. While the C776i is in use, measure between test points TP21 and TP22 for 18.5Vdc and between TP8 and TP22 for 5 Vdc. See Diagram 6.4.
3. If either voltage is absent or significantly low, disconnect the data cable from the lower printed circuit assembly and repeat the voltage measurements in step 3.
4. If the voltage measurements are still absent or significantly low continue with step 8. If the voltage measurements are now correct, the cause is either the lower data cable, upper data cable, mid-point connector or upper printed circuit assembly.
5. Check the upper data cable, lower data cable and mid-point connector per Procedure 6.1 and if necessary replace the appropriate part.
6. If the cables and mid-point connector tested good in step 5, replace the upper printed circuit assembly.
7. If all of the above test have been performed and the C776i is still not functioning correctly, call Precor technical support.

Diagram 6.4 - Lower Printed Circuit Assembly



8. The following A.C. voltage readings will be measured on the **3 PHASE GEN IN** terminals. While the C776i is in use, perform the same A.C. voltage reading between the red and black, red and white and black and white wires. All three voltage readings should be approximately 90 Vac at 60 steps per minute. See Diagram 6.4.
9. If the voltage measurements are absent, disconnect the three generator leads from the **3 PHASE GEN IN** terminals and repeat the measurements in step 8 directly to the generator wires.
10. If the voltage measurements are still absent, replace the generator. If the voltage measurements are now present, replace the lower printed circuit assembly.
11. If all of the above test have been performed and the C776i is still not functioning correctly, call Precor technical support.

Procedure 6.4 - No Resistance

Note:

The term resistance in this case refers to the physical opposition to the downward movement of the stairarm. That is, the greater the resistance, the slower fall rate and the lesser the resistance the faster the fall rate.

1. Remove the left hand, right hand and front cover sections per Procedure XX.
2. Remove both of the wires from the **"LOAD CONNECTIONS"** on the lower printed circuit assembly. Measure between the two wires with an ohmmeter for approximately 13Ω . If the measurement is open or significantly high, replace the generator. If the measurement is correct, replace both wires and continue with step 3. The wires may be connected to the load connection terminals in any order.
3. The following A.C. voltage readings will be measured on the **3 PHASE GEN IN** terminals. While the C776i is in use, perform the same A.C. voltage reading between the red and black, red and white and black and white wires. All three voltage readings should be approximately 90 Vac at 60 steps per minute. See Diagram 6.4.
4. If the voltage measurements are present, replace the lower printed circuit assembly.
5. If the voltage measurements are absent, disconnect the three generator leads from the **3 PHASE GEN IN** terminals and repeat the measurements in step 3 directly to the generator wires.
6. If the voltage measurements are still absent, replace the generator. If the voltage measurements are now present, replace the lower printed circuit assembly.
7. If all of the above test have been performed and the C776i is still not functioning correctly, call Precor technical support.
- 8.

Procedure 6.5 - Troubleshooting Hand Held Heart Rate

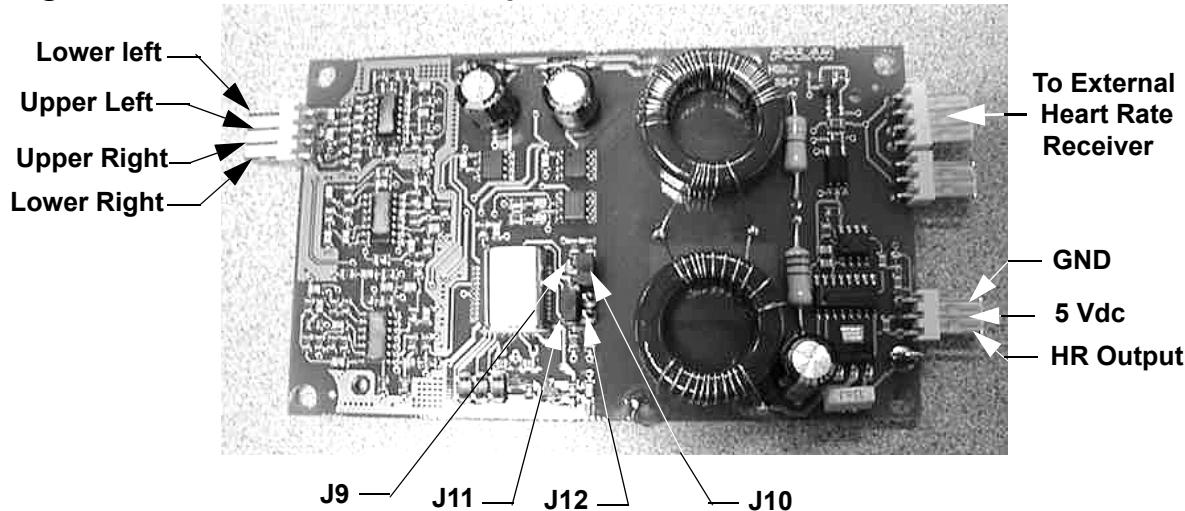
Circuit Description

The hand held heart rate system is actually a dual system, that is, it can accept a Polar heart rate signal from either the hand held heart rate contacts on the unit's handlebar or from a heart rate chest strap transmitter. Refer to Diagram 6.5 and verify the J9, J10, J11 and J12 jumper settings. J10 and J11 should be jumpered. J9 and J12 should be open (as shown in Diagram 6.4). This jumper configuration sets the PCA for hand held priority. That is, if both a hand held and chest strap heart rate signal are being received, the system will accept the hand held signal and ignore the chest strap signal. If a hand held signal is not being received, the system will accept the chest strap signal. This system uses a wireless (chest strap) receiver that is external of the heart rate PCA.

Note:

There are four typical failure modes for the hand held/chest strap heart rate system. They are: hand held is normal - no chest strap reading; no hand held reading - chest strap normal; no hand held or chest strap reading; constant or intermittent readings when neither hand held or chest strap are in use.

Diagram 6.5- Hand held/chest strap heart rate PCA



Normal hand held reading - No chest strap reading

1. Set the on/off switch in the "off" position. Remove the upper display housing. Temporarily remove the jumper from J10. This changes the system to chest strap priority.
2. Set the on/off switch in the "on" position and access the diagnostic program (Procedure 2.2). Advance to the heart rate display portion of the diagnostic program. Verify that a chest strap signal is not being accepted with either a heart rate test transmitter or a chest strap transmitter.

3. if a hand held signal is being accepted and a chest strap signal is not being accepted, verify that the chest strap is good by testing it with a heart rate test receiver. If the chest strap is good, replace the external chest strap receiver. If the heart rate test receiver does not accept a signal from the chest strap, replace the chest strap.
4. Replace the jumper on J10 (removed in step 1).

No hand held reading - Normal chest strap reading

5. Set the on/off switch in the “on” position and access the diagnostic program (Procedure 2.2). Advance to the heart rate display portion of the diagnostic program. Verify that a hand held signal is not being accepted by firmly grasping both the right and left hand held contacts on the handlebars. Cover as much of the contact surface area with your hands as possible (without moving your hands), you should receive a heart rate reading within ten seconds.
6. If a hand held heart rate signal was not received in step 5, grasp both the right and left hand held contacts with the opposite hands, right hand on the left handlebar contacts and left hand on the right handlebar contacts. Cover as much of the contact surface area with your hands as possible, you should receive a heart rate reading within ten seconds. If a hand held signal is still not being accepted, skip to step 8.
7. If a hand held signal was accepted in step 6, the hand held contact wiring (in the handlebar) is reversed. The end of the wire harness that connects to the hand held contacts in the handlebar is segregated into two groups. One group has blue shrink wrap around it and the other group has black shrink wrap around it. The “blue” group must go to the right hand contacts and the “black” group must go to the left hand contacts. In both groups the black wire must go to the lower contact and the red wire must go to the upper contact. If necessary, rewire the hand held contacts as described above and test as described in step 5.
8. Set the on/off switch in the “off” position. Refer to Diagram 6.4 for the following measurements. With an ohmmeter measure between the “lower right contact” pin on the J1 connector and the lower right hand held heart rate contact on the handlebar. The reading should be 1 Ω or less. Measure between the “upper right contact” pin on the J1 connector and the upper right hand held heart rate contact on the handlebar. The reading should be 1 Ω or less. Measure between the “upper left contact” pin on the J1 connector and the upper left hand held heart rate contact on the handlebar. The reading should be 1 Ω or less. Measure between the “lower left contact” pin on the J1 connector and the lower left hand held heart rate contact on the handlebar. The reading should be 1 Ω or less. If any of the above readings are greater than 1 Ω , replace the heart rate PCA to handlebar wire harness.

No hand held reading - No chest strap reading

9. Set the on/off switch in the “on” position and access the diagnostic program (Procedure 2.2). Advance to the heart rate display portion of the diagnostic program. Verify that neither a chest strap signal or a hand held signal is being accepted with either a heart rate test transmitter or a chest strap transmitter.
10. Check the plug/connector connections on both the heart rate PCA (J2), and upper PCA (J5).

11. If neither a chest strap signal or a hand held signal is being accepted, measure between the "ground" and "5 Vdc" pins on J2 for 5 Vdc. If 5 Vdc is present, replace the heart rate PCA.
12. If 5 Vdc is not present, remove the connector from J2 of the heart rate PCA. Measure between the "ground" and "5 Vdc" pins of the connector (just removed from the heart rate PCA) for 5 Vdc. If 5 Vdc is present, replace the heart rate PCA. If the 5 Vdc is not present, measure between the corresponding pins of J1 on the upper PCA (red and black wires). If 5 Vdc is not present replace the upper PCA. If 5 Vdc is present, replace the upper PCA to heart rate PCA cable.

Constant or intermittent readings when neither the hand held or chest strap is in use

13. Verify that a ferrite core is clamped around the heart rate PCA to upper PCA cable.
14. Constant or intermittent heart rate readings when neither heart rate system is in use is caused by something in the near vicinity radiating RF energy that is being received by the chest strap portion of the heart rate PCA.
15. Temporarily, disconnect the external heart rate receiver from the heart rate PCA. Set the on/

Procedure 7.1 - Replacing the Covers

1. There are four cover sections, left hand, right hand, front and rear.

Left Hand Cover Section Removal

2. Remove the three screws that fasten the left hand cover section to the front cover section.
3. The left hand cover has four tabs that snap into the front cover section. Carefully remove the left hand cover.

Right Hand Cover Section Removal

4. Remove the three screws that fasten the right hand cover section to the front cover section.
5. The right hand cover has four tabs that snap into the front cover section. Carefully remove the left hand cover.

Rear Cover Section Removal

6. Lowering one of the stairarms makes rear cover removal easier.
7. The rear cover section is fastened with four screws, two on top and two on the bottom.
8. Remove the four cover screws and carefully remove the rear cover.

Front Cover Section Removal

9. The left and right hand cover sections must be removed before the front cover section can be removed.
10. The front cover section is fastened with four screws, two on top and two on the bottom. The lower front cover mounts utilize spacers.
11. Remove the four front cover mounting screws and associated spacers. Remove the front cover section.

Rear Cover Section Replacement

12. Lowering one of the stairarms makes rear cover replacement easier.
13. Set the rear cover in its mounting position and fasten it with the four screws removed in step 8.

Front Cover Section Replacement

14. The front section must be replaced before either the left hand or right hand cover sections can be replaced.
15. Set the front cover section in its mounting position.
16. Fasten the front cover section with the screws and spacers removed in step 11.

Left Hand Cover Section Replacement

17. Set the left hand cover section in its mounting position and carefully snap its four tabs into the front cover section.
18. Fasten the left hand cover section with the screws removed in step 2.

Right Hand Cover Section Replacement

19. Set the right hand cover section in its mounting position and carefully snap its four tabs into the front cover section.
20. Fasten the right hand cover section with the screws removed in step 4.

Procedure 7.2 - Replacing the Upper PCA

Follow anti-static handling procedures and wear an anti-static device (such as a wrist strap) when you perform this procedure.

1. Remove the four screws that fasten the display front panel to display housing.
2. Disconnect the data cable and heart rate cable from the upper printed circuit assembly.
3. Disconnect the keyboard cable from the upper printed circuit assembly. See Diagram 7.1.

Diagram 7.1 - Keyboard and Upper Printed Circuit Assembly



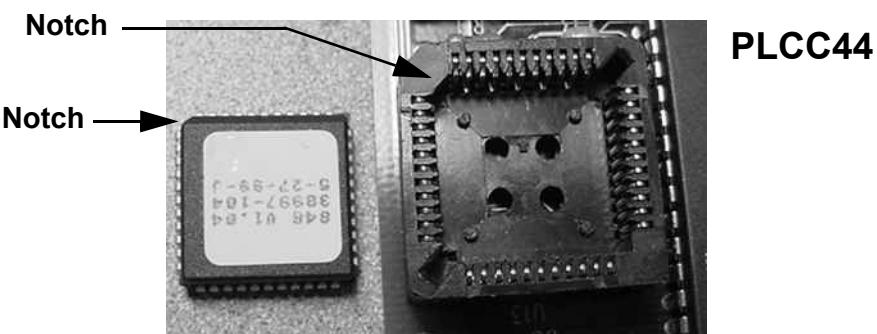
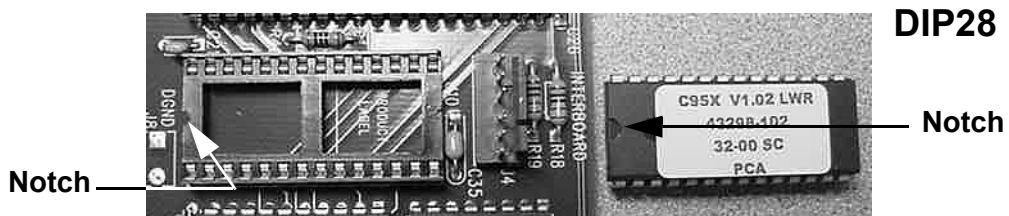
4. Remove the four screws that fasten the upper printed circuit assembly to the display front panel.
5. Set the replacement upper printed circuit assembly in its mounting position on the display front panel and fasten it with the four screws removed in step 4.
6. Set the display front panel near its mounting position and reconnect the data cable and heart rate cable to the upper printed circuit assembly.
7. Set the display front panel in its mounting position on the display housing and fasten it with the four screws removed in step 1.
8. Thoroughly test the C776i as described in Section Four.

Procedure 7.3 - Replacing the PROM

1. The PROM and the associated printed circuit assembly (PCA) are static sensitive. Anti-static devices must be used and all anti-static precautions must be followed during this procedure.
2. Remove the printed circuit assembly per its associated procedure.
3. Currently we are using two styles of IC software packages. they are a 28 pin dual in line package (DIP28) and a forty-four pin square package (PLCC44). Each of these packages should be removed with a proper IC removal tool (see the illustrations below)



4. The IC's may inserted into their socket by hand by carefully aligning the notch on the IC with the notch on the IC socket and carefully pressing the IC into its socket. See the illustrations below for the alignment notches. Care must be taken that the IC legs on a DIP28 are all aligned in the socket to prevent the legs from bending when inserted. The PLCC44 IC must be carefully aligned squarely in its socket or it will not insert. Do not force the IC into its, socket. If it does not insert easily, remove the it and re-align it in its socket.



Procedure 7.4 - Replacing the Keyboard (Display Front Panel)

Follow anti-static handling procedures and wear an anti-static device (such as a wrist strap) when you perform this procedure.

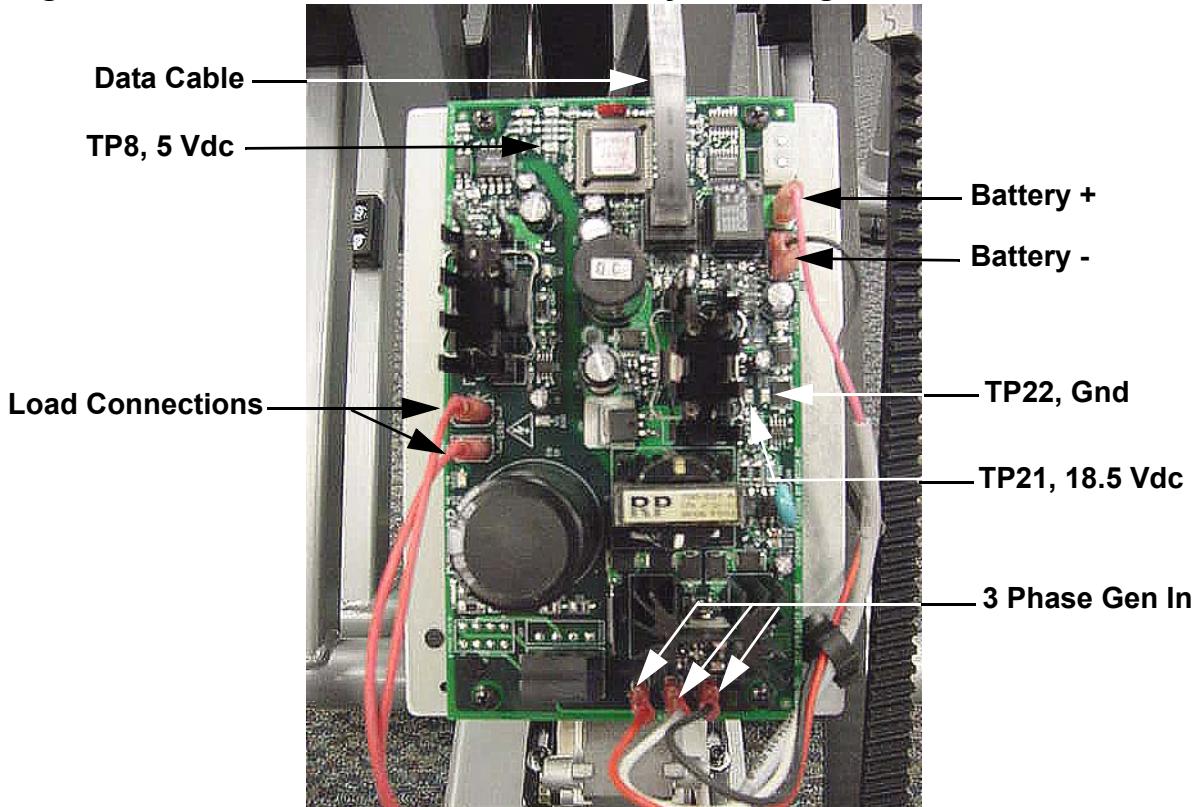
1. Remove the four screws that fasten the display front panel to display housing.
2. Disconnect the data cable and heart rate cable from the upper printed circuit assembly.
3. Disconnect the keyboard cable from the keyboard assembly. See Diagram 7.1.
4. Remove the four screws that fasten the upper printed circuit assembly to the display front panel.
5. Set the upper printed circuit assembly removed in step 4 in its mounting position on the replacement display front panel and fasten it with the four screws removed in step 4.
6. Set the display front panel near its mounting position and reconnect the data cable and heart rate cable to the upper printed circuit assembly.
7. Set the display front panel in its mounting position on the display housing and fasten it with the four screws removed in step 1.
8. Thoroughly test the C776i as described in Section Four.

Procedure 7.5 - Replacing the Lower PCA

Follow anti-static handling procedures and wear an anti-static device (such as a wrist strap) when you perform this procedure.

1. Remove the left hand and right hand cover sections per Procedure 1.
2. Remove all of the wiring connections from the lower printed circuit assembly. See Diagram 7.2.
3. Remove the four screws that fasten the lower printed circuit assembly to its mounting bracket.

Diagram 7.2 - Lower Printed Circuit Assembly Mounting



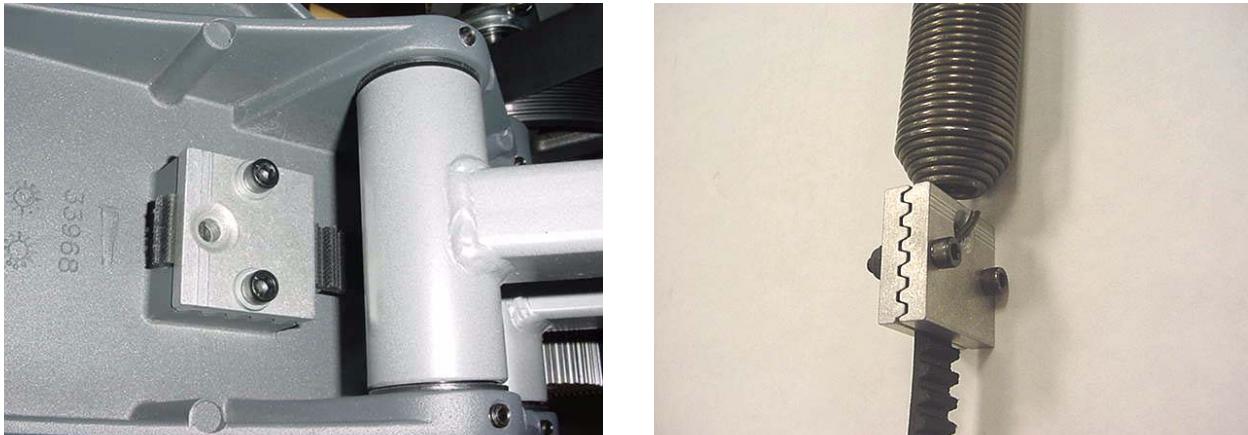
4. Set the replacement lower printed circuit assembly in its mounting position and fasten it with the four screws removed in step 3.
5. Connect the red lead from the battery to the **BAtTERY +** terminal. Connect the black lead from the battery to **BATTERY -** terminal.
6. Connect the two red wires from the generator to the **LOAD** terminals. These wires may be connected in any order.

7. Connect the red, black and white wires from the generator to the **3 PHASE GEN IN** terminals. These wires may be connected in any order.
8. Connect the data cable to its connector on the lower printed circuit assembly.
9. Replace the left hand and right hand covers per Procedure 7.1.

Procedure 7.6 - Replacing A Stairarm Belt

1. Remove the left hand or right hand cover, as required, per Procedure 7.1.
1. Grasp the stairarm return spring and carefully remove it from its mounting peg. See Diagram 5.1.
2. Support the stairarm and remove the stairarm belt from both flanged pulleys and the HTD pulley.
3. Remove the bolts that fasten the clamp on the bottom of the stairarm foot plate. Remove the belt from the stairarm foot plate. See Diagram 7.3.

Diagram 7.3 - Stairarm Belt Clamps

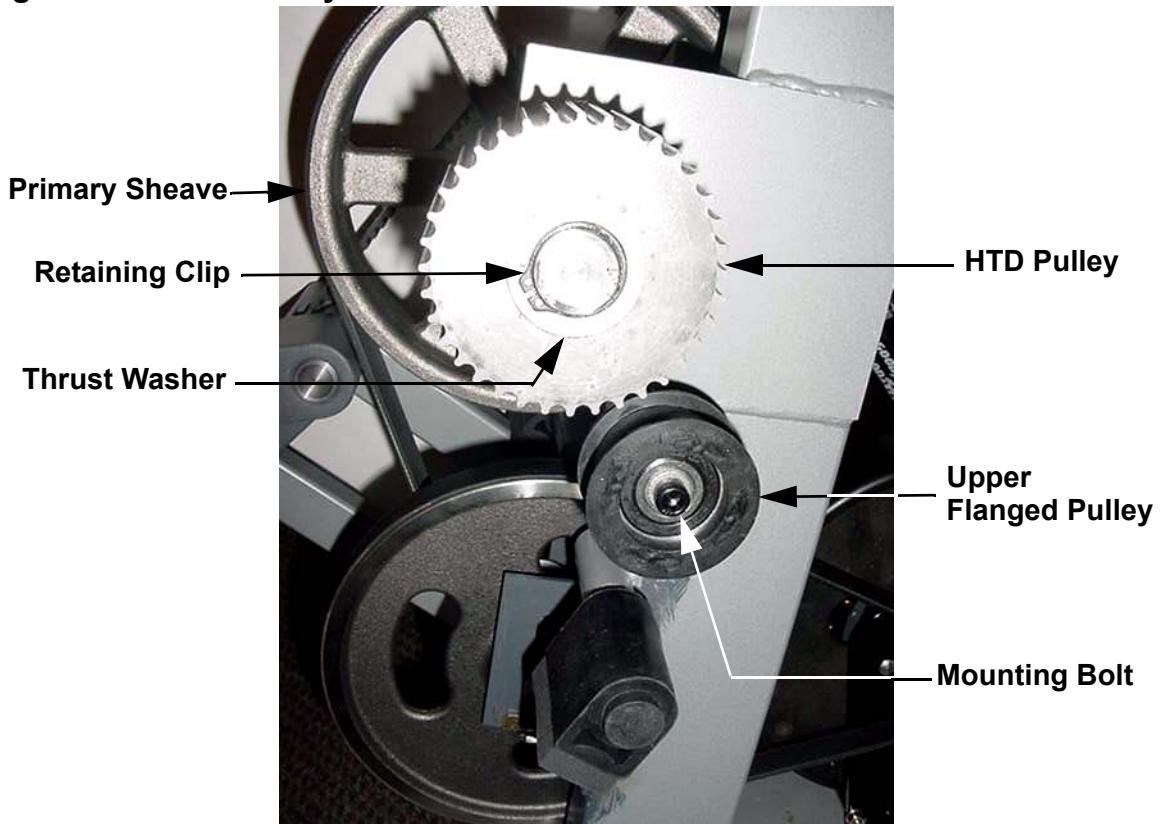


4. Remove the return spring from the other belt clamp. Remove the bolts that fasten the belt clamp to the belt and remove the belt from the clamp.
5. If the replacement belt is a loop, cut it between any set of teeth.
6. Refer to diagram 7.3, feed the belt into the stairarm foot plate through the slot in the front edge of the stairarm foot plate. Replace the clamp and fasten the belt in the clamp with the bolts removed in step 3.
7. Place the other belt clamp on the other end of the belt and fasten the belt clamp on the belt with the bolts removed in step 4. Hook the return spring into the belt clamp.
8. Refer to diagram 7.4, wrap the stairarm belt over the top of HTD pulley, behind and under the upper flanged pulley. Refer to diagram 7.5, wrap the belt under and around the lower flanged pulley. Then lift the stairarm and hook the return spring on its mounting peg. Check the belt to ensure there are no twists in the belt. If there are remove the return spring from its mounting peg and rotate the return spring to remove any twist. Hook the return spring on its mounting peg.
9. Replace the left hand and/or right hand cover sections per Procedure 7.1

Procedure 7.7 - Replacing a HTD (Toothed) Pulley

1. Remove the left hand or right hand cover, as required, per Procedure 7.1.
2. Grasp the stairarm return spring and carefully remove it from its mounting peg. See Diagram 5.1.
3. Support the stairarm and remove the stairarm belt from both flanged pulleys and the HTD pulley. Lower the stairarm to its lowest position.
4. Rotate the HTD pulley. Note that it free wheels when rotated toward the front of the climber and engages the primary sheave when rotated toward the rear of the climber. The replacement pulley must be mounted so it rotates in the same manner. See Diagram 7.4.

Diagram 7.4 - HTD Pulley



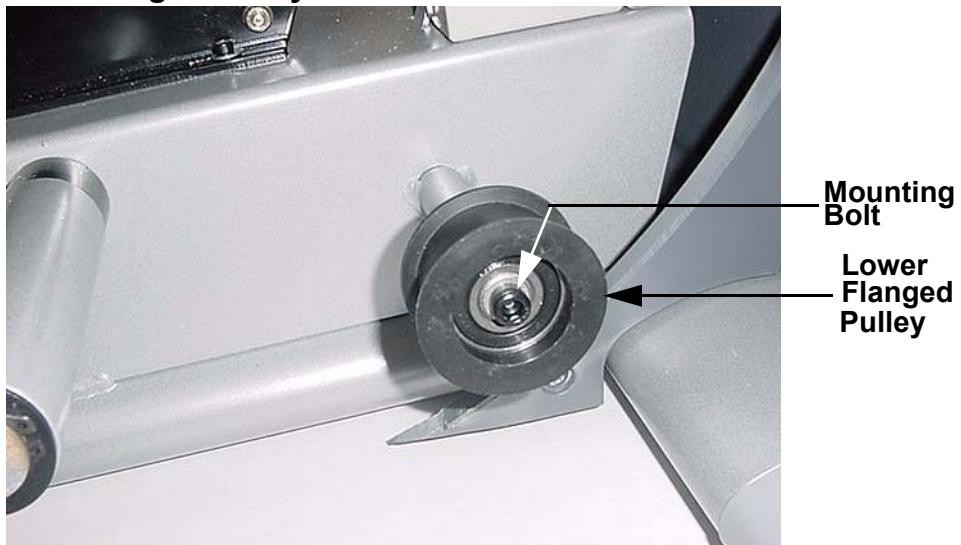
5. Remove the retaining clip from the HTD pulley. Remove the thrust washer from the shaft. Slide the HTD pulley off of the shaft. Verify that there are three thrust washers, one wave washer and another thrust washer remaining on the shaft.
6. Slide the replacement HTD pulley onto the shaft. Verify that it rotates as described in step 4. Slide the thrust washer onto the shaft. Fasten the HTD pulley with the retaining clip removed in step 5.

7. Wrap the stairarm belt over the HTD pulley, behind and under the upper flanged pulley. Wrap the belt under and around the lower flanged pulley. Then lift the stairarm and hook the return spring on its mounting peg. Check the belt to ensure there are no twists in the belt. If there are remove the return spring from its mounting peg and rotate the return spring to remove any twist. Hook the return spring on its mounting peg.
8. Replace the left hand and right hand cover sections per Procedure 7.1.

Procedure 7.8 - Replacing a Flanged Pulley

1. There are four flanged pulleys, two on either side. Remove the left hand or right hand cover, as required, per Procedure 7.1.
2. Grasp the stairarm return spring and carefully remove it from its mounting peg. See Diagram 5.1.
3. Support the stairarm and remove the stairarm belt from both flanged pulleys and the HTD pulley. Lower the stairarm to its lowest position.
4. Remove the flanged pulley mounting bolt. Remove the flanged pulley. See Diagrams 7.4 and 7.5.

Diagram 7.5 - Lower Flanged Pulley

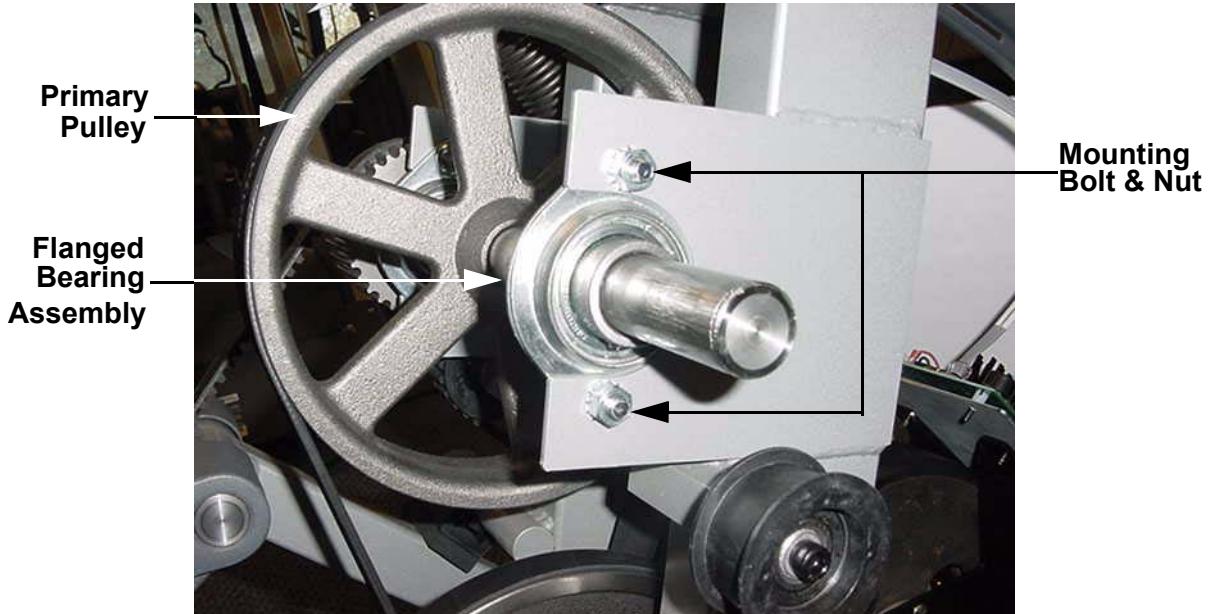


5. Set the replacement flanged pulley at its mounting position and fasten it with the bolt removed in step 4. Torque the mounting bolt to 120 inch pounds.
6. Wrap the stairarm belt over the HTD pulley, behind and under the upper flanged pulley. Wrap the belt under and around the lower flanged pulley. Then lift the stairarm and hook the return spring on its mounting peg. Check the belt to ensure there are no twists in the belt. If there are remove the return spring from its mounting peg and rotate the return spring to remove any twist. Hook the return spring on its mounting peg.
7. Replace the left hand and right hand cover sections per Procedure 7.1.

Procedure 7.9 - Replacing the Primary Sheave

1. Remove the left hand cover, right hand cover and rear cover per Procedure 7.1.
2. Grasp one of the stairarm return springs and carefully remove it from its mounting peg. See Diagram 5.1.
3. Support the stairarm and remove the stairarm belt from both flanged pulleys and the HTD pulley. Lower the stairarm to its lowest position.
4. Repeat steps 2 and 3 with the remaining stairarm belt.
5. Remove the retaining clip from one of the HTD pulleys. Remove the thrust washer from the shaft. Slide the HTD pulley off of the shaft. Remove the remaining three thrust washers, wave washer and another thrust washer from the shaft.
6. Remove the remaining HTD pulley as described in step 5.
7. Remove tension from the primary belt with the secondary sheave tension adjusters. See Diagram 7.7.
8. Remove the four bolts and nuts (two each side) that fasten the flange bearing assemblies to the frame. See Diagram 7.6.

Diagram 7.6 - Primary Sheave Mounting



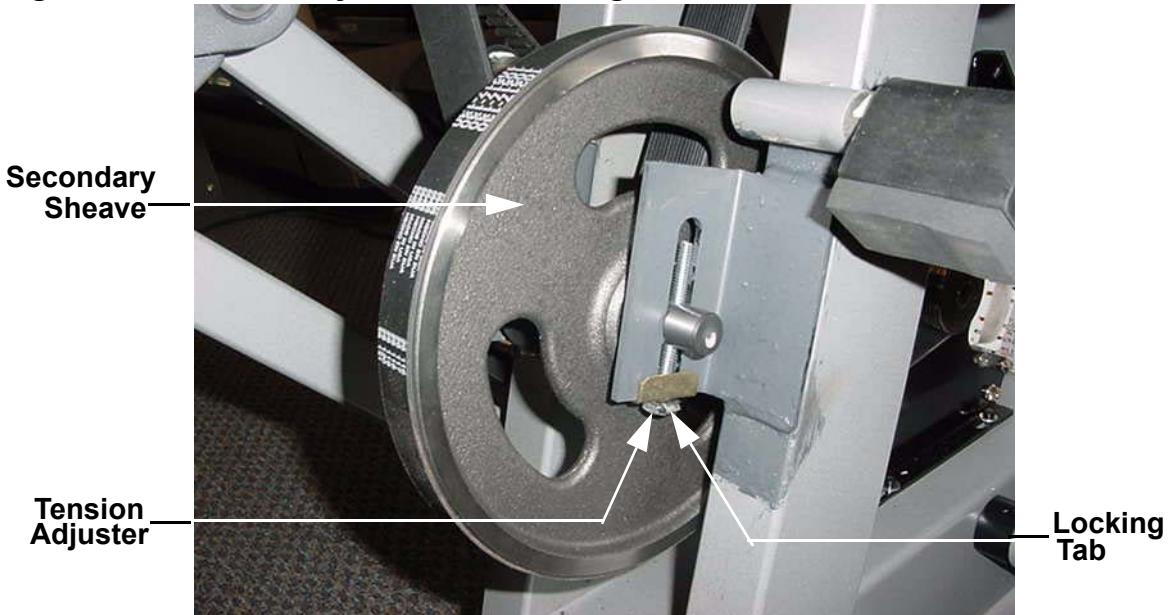
9. Slide the primary sheave out the frame and remove it from the primary belt.

10. Set the replacement primary sheave inside the primary belt then set the primary sheave in its mounting position. Insert the four mounting bolts, removed in step 8 through the flanged bearing assembly and the frame. Hand start the four mounting nuts on the mounting bolts. Torque the mounting nuts to 120 inch pounds.
11. Slide a thrust washer onto one of the primary sheave shafts, then a wave washer and then three more thrust washers.
12. Slide one of the HTD pulleys onto the shaft. Verify that it rotates as described in step 4 of Procedure 7.7. Slide another thrust washer onto the shaft. Fasten the HTD pulley with the retaining clip removed in step 5.
13. Replace the remaining HTD pulley as described in steps 11 and 12.
14. Tension both the primary and generator belts as described in Procedure 5.2.
15. Wrap one of the stairarm belts over the HTD pulley, behind and under the upper flanged pulley. Wrap the belt under and around the lower front flanged pulley. Then lift the stairarm and hook the return spring on its mounting peg. Check the belt to ensure there are no twists in the belt. If there are remove the return spring from its mounting peg and rotate the return spring to remove any twist. Hook the return spring on its mounting peg.
16. Replace the remaining stairarm belt as described in step 15.
17. Replace the left hand cover, right hand cover and rear cover sections per Procedure 7.1.

Procedure 7.10 - Replacing the Secondary Sheave

1. Remove the left hand cover, right hand cover and rear cover per Procedure 7.1.
2. Using a pair of pliers, straighten the locking tabs on both secondary sheave adjusters. Remove both of the secondary sheave tension adjusters. See Diagram 7.7.

Diagram 7.7 - Secondary Sheave Mounting



3. Remove the primary belt from the primary sheave's hub and allow it to lay on the primary sheave's shaft. This will allow clearance for the removal of the secondary sheave.
4. Remove the secondary sheave from both the primary and generator belts.
5. Place the primary belt and generator belt around the replacement secondary sheave. Set the secondary sheave in its mounting position. Tension both the primary belt and generator belt per Procedure 5.2.
6. Bend both tension adjuster locking tabs to prevent the tension adjuster bolts from turning.
7. Replace the left hand cover, right hand cover and rear cover per procedure 7.1.

Procedure 7.11 - Replacing the Primary Drive Belt

1. Remove the primary sheave per Procedure 7.9, steps 1-9.
2. Remove the secondary sheave per Procedure 7.10, steps 2-4.
3. Set the primary sheave inside the replacement primary belt then set the primary sheave in its mounting position. Insert the four mounting bolts, removed in step 8 of procedure 7.9, through the flanged bearing assembly and the frame. Hand start the four mounting nuts on the mounting bolts. Torque the mounting nuts to 120 inch pounds.
4. Slide a thrust washer onto one of the primary sheave shafts, then a wave washer and then three more thrust washers.
5. Slide one of the HTD pulleys onto the shaft. Verify that it rotates as described in step 4 of Procedure 7.7. Slide another thrust washer onto the shaft. Fasten the HTD pulley with the retaining clip removed in step 5.
6. Replace the remaining HTD pulley as described in steps 11 and 12.
7. Place the replacement primary belt along with the generator belt around the replacement sheave. Set the secondary sheave in its mounting position. Hand start both secondary sheave tension adjusters.
8. Tension both the primary belt and generator belt per Procedure 5.2.
9. Replace the left hand, right hand and rear covers per Procedure 7.1.

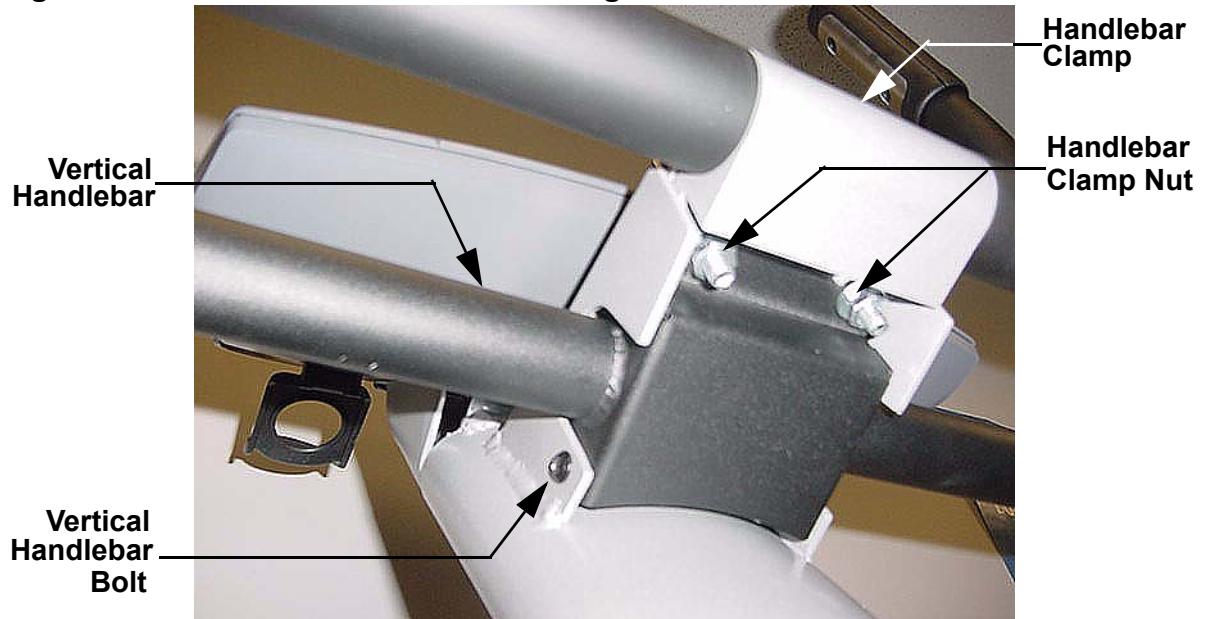
Procedure 7.12 - Replacing the Generator Belt

1. Remove the secondary sheave per Procedure 7.10, steps 1-4. Remove the generator belt.
2. Set the replacement generator belt on the secondary sheave along with the primary belt.
3. Set the secondary sheave in its mounting position. Hand start both secondary sheave tension adjusters.
4. Place the generator belt around the generator pulley.
5. Tension both the primary belt and generator belt per Procedure 5.2.
6. Replace the left hand, right hand and rear covers per Procedure 7.1.

Procedure 7.13 - Replacing a Vertical Handlebar Assembly

1. Remove the two (one each side) vertical handlebar mounting bolts. See Diagram 7.8.

Diagram 7.8 - Vertical Handlebar Mounting



2. While supporting the vertical handlebar, remove both handlebar clamp nuts. Carefully, lower the vertical handlebar and then rotate it and set it on the left and right handlebars as shown in Diagram 7.9.

Diagram 7.9 - Vertical Handlebar Removal

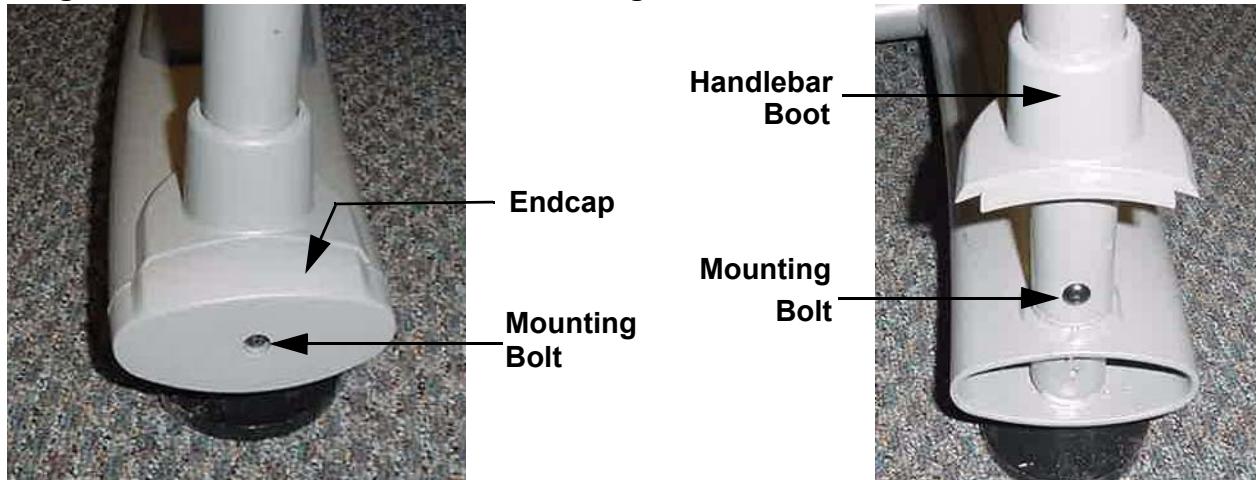


3. Disconnect the hand held heart rate (HHHR) connectors. Remove the vertical handlebar assembly.
4. Set the replacement vertical handlebar assembly on the left and right handlebars as shown in Diagram 7.9. Connect the hand held heart rate (HHHR) connectors.
5. While rotating the vertical handlebar assembly into its mounting position, feed the hand held heart rate cable into the access hole in the upright column.
6. Hand start but do not tighten the two handlebar clamp bolts removed in step 2. Hand start but do not tighten the two vertical handlebar bolts removed in step 1.
7. Verify that both the left and right hand handlebars are fully inserted in the handlebar clamp. Securely tighten both handlebar clamp nuts. Then tighten both vertical handlebar bolts.

Procedure 7.14 - Replacing the Right or Left Handlebar

1. Loosen but do not remove the two handlebar clamp nuts. See Diagram 7.8.
2. Remove the bolt retaining the frame end cap. Remove the frame endcap and slide the handlebar boot up to expose the handlebar mounting bolt. See Diagram 7.10

Diagram 7.10 - Lower Handlebar Mounting

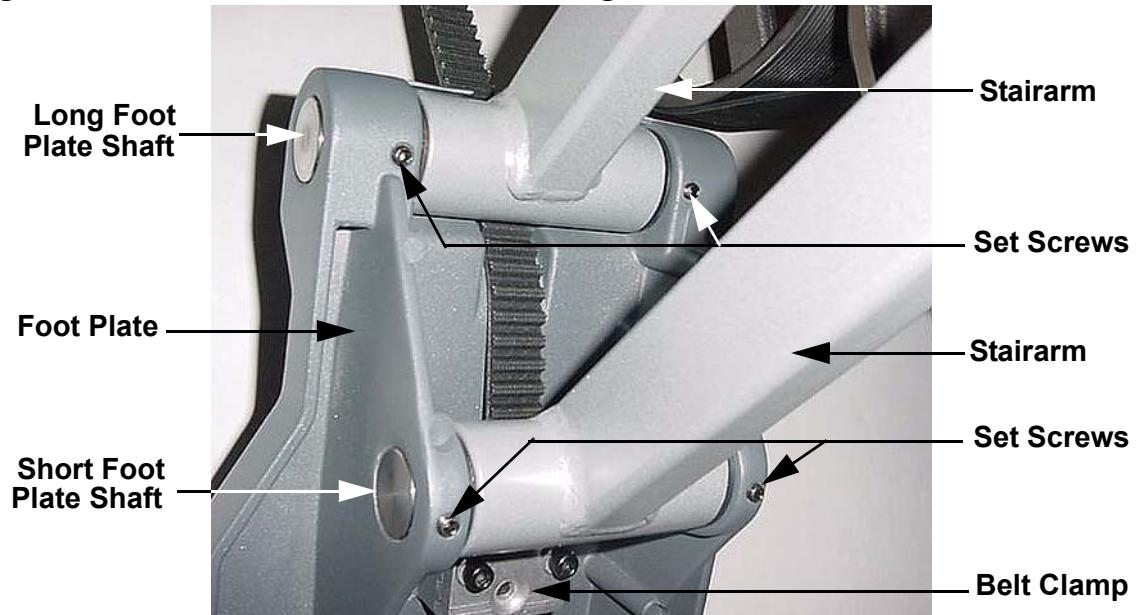


3. Remove the handlebar mounting bolt.
4. Slide the upper end of the handlebar out the handlebar clamp and lift the handlebar from its lower rear mount.
5. Remove the handlebar boot from the handlebar and install it on the replacement handlebar.
6. Set the replacement handlebar on its lower rear mount and slide the upper end of the handlebar into the handlebar clamp.
7. Verify that both the left and right handlebar are fully inserted in the handlebar clamp and tighten both handlebar clamp nuts.
8. Fasten the lower rear handlebar with the bolt removed in step 3.
9. Slide the handlebar boot down into position and replace the endcap with the bolt removed in step 2.

Procedure 7.15 - Replacing a Stairarm Foot Plate

1. Remove the left hand or right hand cover, as required, per Procedure 7.1.
2. Grasp the stairarm return spring and carefully remove it from its mounting peg. See Diagram 5.1.
1. Support the stairarm and remove the stairarm belt from both flanged pulleys and the HTD pulley. Lower the stairarm to its lowest position.
2. Remove the four set screws that retain the foot plate shafts. See Diagram 7.11.

Diagram 7.11 - Stairarm Foot Plate Mounting



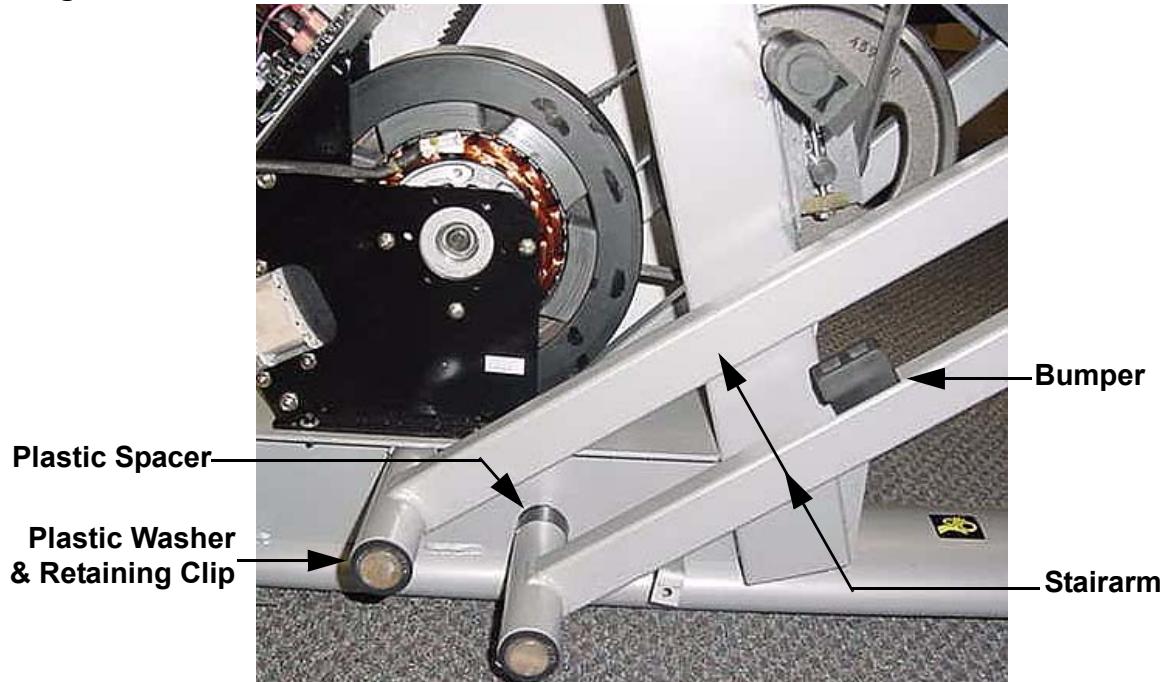
3. While supporting the foot plate, remove both foot plate shafts and remove the foot plate.
4. Remove the bolts that retain the belt clamp and remove the belt from the foot plate.
5. Set the replacement foot plate in its mounting position and replace both the long and short foot plate shaft as shown in Diagram 7.11.
6. Verify that the ends of the foot plate shafts are flush with the edge of the foot plates. Apply blue loctite to the set screws, removed in step 2, and secure the foot plate shafts with the set screws.
7. Feed the belt into the stairarm foot plate through the slot in the front edge of the stairarm foot plate. Replace the clamp and fasten the belt in the clamp with the bolts removed in step 4.

8. Wrap the stairarm belt over the HTD pulley, behind and under the upper flanged pulley. Wrap the belt under and around the lower flanged pulley. Then lift the stairarm and hook the return spring on its mounting peg. Check the belt to ensure there are no twists in the belt. If there are remove the return spring from its mounting peg and rotate the return spring to remove any twist. Hook the return spring on its mounting peg.
9. Replace the left hand and/or right hand cover sections per Procedure 7.1

Procedure 7.16 - Replacing a Stairarm

1. Remove the stairarm foot plate per Procedure 7.15, steps 1-3.
2. Remove the retaining clip and the black plastic washer from the stairarm being replaced. See Diagram 7.12.

Diagram 7.12 - Stairarms

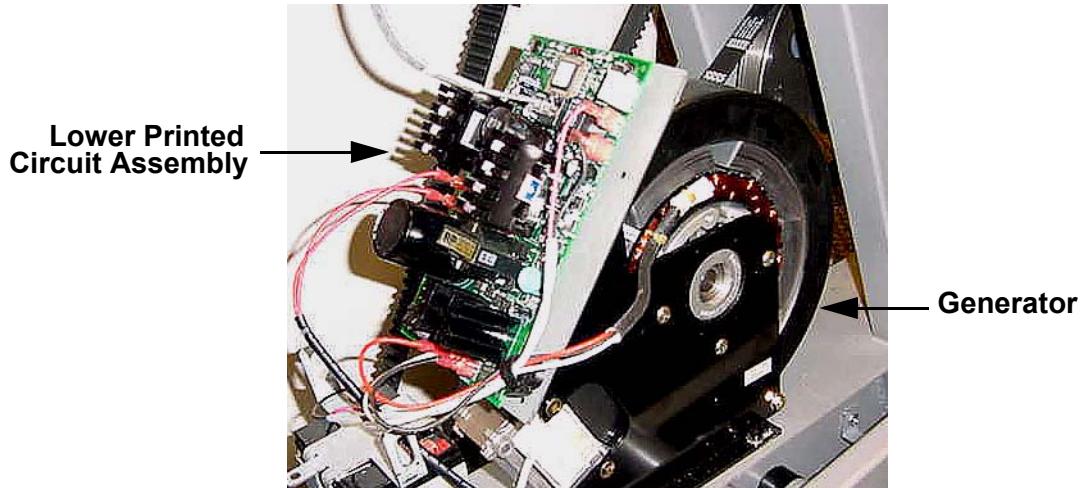


3. Remove the stairarm. If the lower stairarm is being replaced, remove the bumper from the stairarm and mount it on the replacement stairarm.
4. The upper and lower stairarms are the same part. Therefore, the upper stairarm will also have bumper mounting holes. If the upper stairarm is being replaced, orient the stairarm so that the bumper mounting holes are facing downward.
5. Verify that the black plastic spacer is on the stairarm mounting shaft and slide the replacement stairarm onto the stairarm mounting shaft.
6. Fasten the stairarm with the black plastic washer and retaining clip removed in step 2.
7. Replace the foot plate and belt per Procedure 7.15, steps 5-9.

Procedure 7.17 - Replacing a Generator

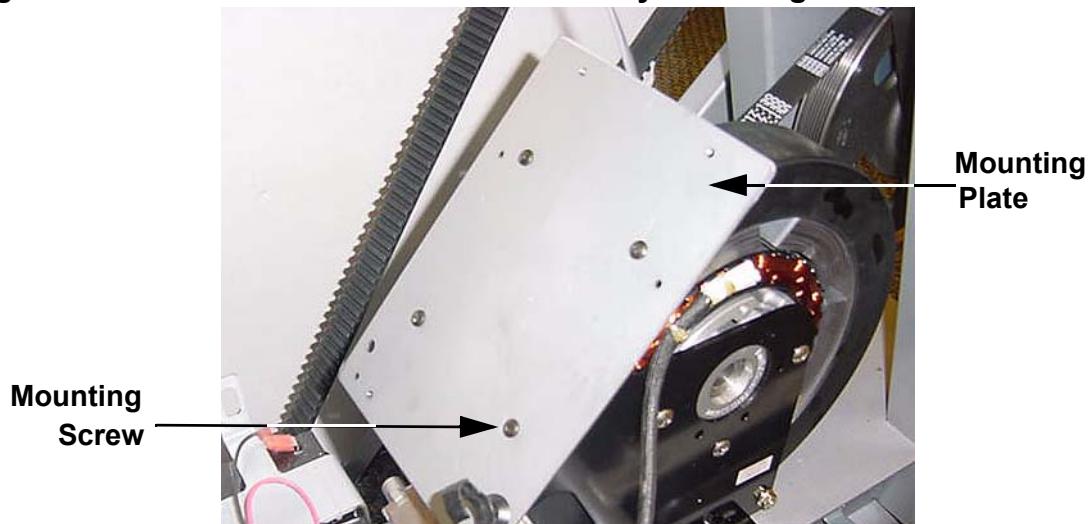
1. Remove the left hand cover per Procedure 7.1.
2. Attach the wrist strap to your arm, then connect the ground lead of the wrist strap to the climber frame.
3. Disconnect all of the wiring from the lower printed circuit assembly See Diagram 7.13.

Diagram 7.13 - Generator Mounting



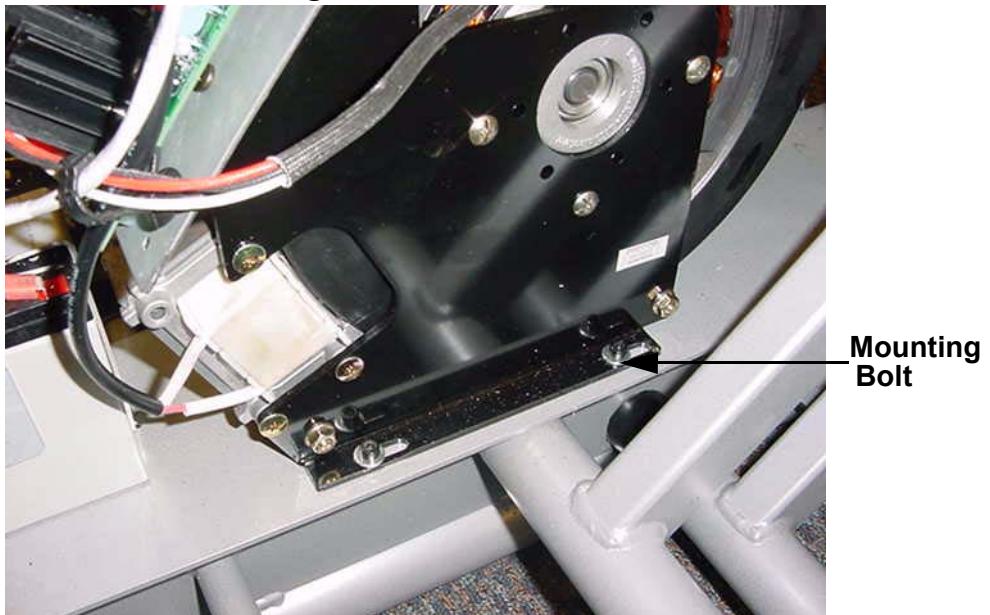
4. Remove the four screws that retain the lower printed circuit assembly. Remove the lower printed circuit assembly and set it on a static safe surface.
5. Remove the four screws that fasten the lower printed circuit assembly mounting plate to the generator. See Diagram 7.14

Diagram 7.14 - Lower Printed Circuit Assembly Mounting Plate



6. Remove the four bolts that fasten the generator to the frame. See Diagram 7.15.

Diagram 7.15 - Generator Mounting



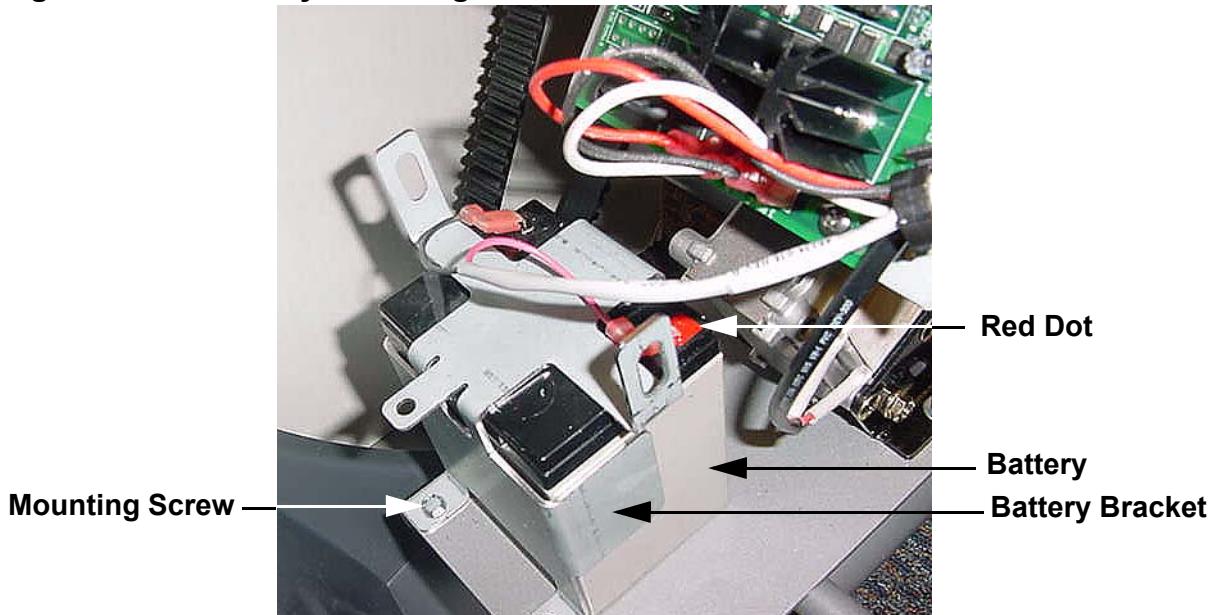
7. Remove the generator belt from the generator then remove the generator from the climber.
8. Set the replacement generator at its mounting position. Hand start, but do not tighten the four generator mounting bolts removed in step 6. Set the generator belt on the generator's pulley.
9. Place the belt tension gauge on the generator belt as shown in Diagram 5.3.
10. Using the slots in the frame and a flat metal bar as a lever, move the generator until the belt tension is 80 pounds and torque the four generator mounting bolts to 40 inch pounds.
11. Set the lower printed circuit assembly mounting plate at its mounting position on the generator and fasten it with the screws removed in step 5.
12. Set the lower printed circuit assembly in its mounting position on its mounting plate and fasten it with the screws removed in step 4.
13. Connect the red lead from the battery to the **BAtTERY +** terminal. Connect the black lead from the battery to **BATTERY -** terminal. See Diagram 7.2.
14. Connect the two red wires from the generator to the **LOAD** terminals. These wires may be connected in any order.
15. Connect the red, black and white wires from the generator to the **3 PHASE GEN IN** terminals. These wires may be connected in any order.
16. Connect the data cable to its connector on the lower printed circuit assembly.

17. Replace the left hand cover per Procedure 7.1.
18. Check the C776i per Section Four.

Procedure 7.18 - Replacing a Battery

1. Remove the left hand cover per Procedure 7.1.
2. Remove the red and black wires from the battery. See Diagram 7.16.

Diagram 7.16 - Battery Mounting

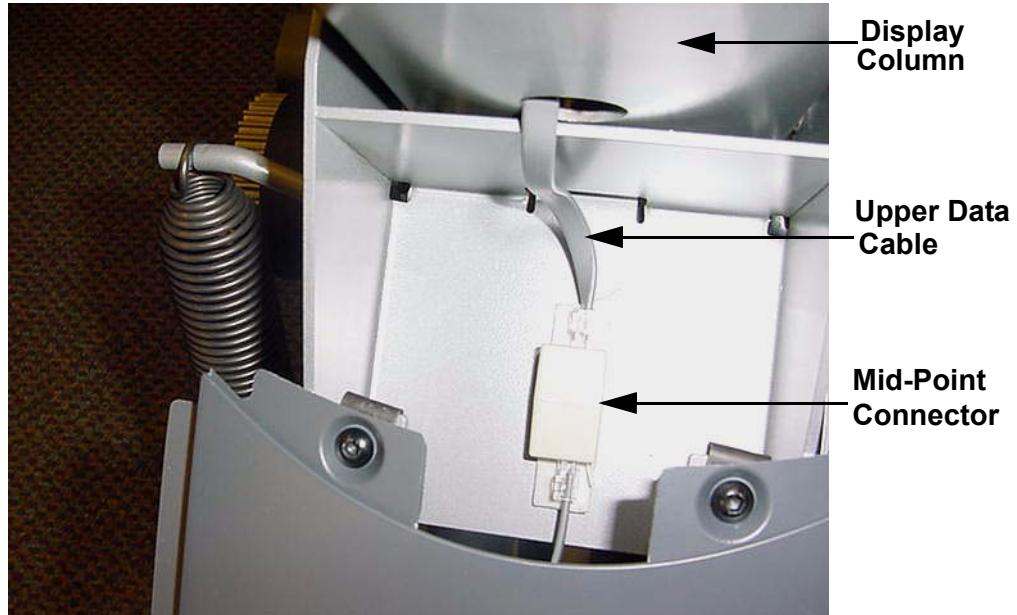


3. Remove both of the battery bracket mounting screws. Carefully, remove the battery bracket from the battery. Care must be taken to avoid touching the battery terminals with the battery bracket.
4. Remove the battery from the climber.
5. Set the replacement battery in its mounting position with the red dot oriented as shown in Diagram 7.16.
6. Set the battery bracket in its mounting position taking care to avoid touching the battery terminals with the battery bracket. Fasten the battery bracket to the frame with the screws removed in step 3.
7. Connect the red wire removed in step 2 to the battery terminal with the red dot. Connect the black lead to the remaining terminal of the battery.
8. Replace the left hand cover per Procedure 7.1.
9. Test the C776i per Section Four.

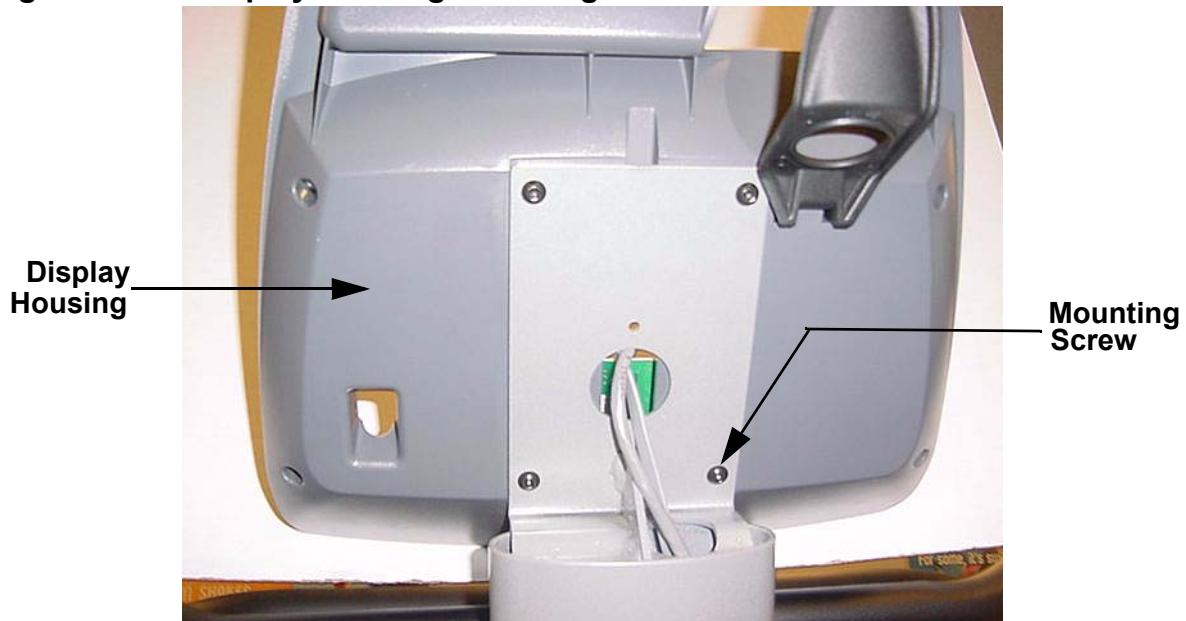
Procedure 7.19 - Replacing a Display Column

1. Remove the left hand, right hand and rear covers per Procedure 7.1.
2. Remove the left and right handlebars per Procedure 7.14, steps 1-5.
3. Remove the vertical handlebar per Procedure 7.13, steps 1-3. Remove the handlebar clamp.
4. Remove the rear display cover screw and the rear display cover. See Diagram 6.1.
5. Disconnect the upper data cable from the mid-point connector. See Diagram 7.17.

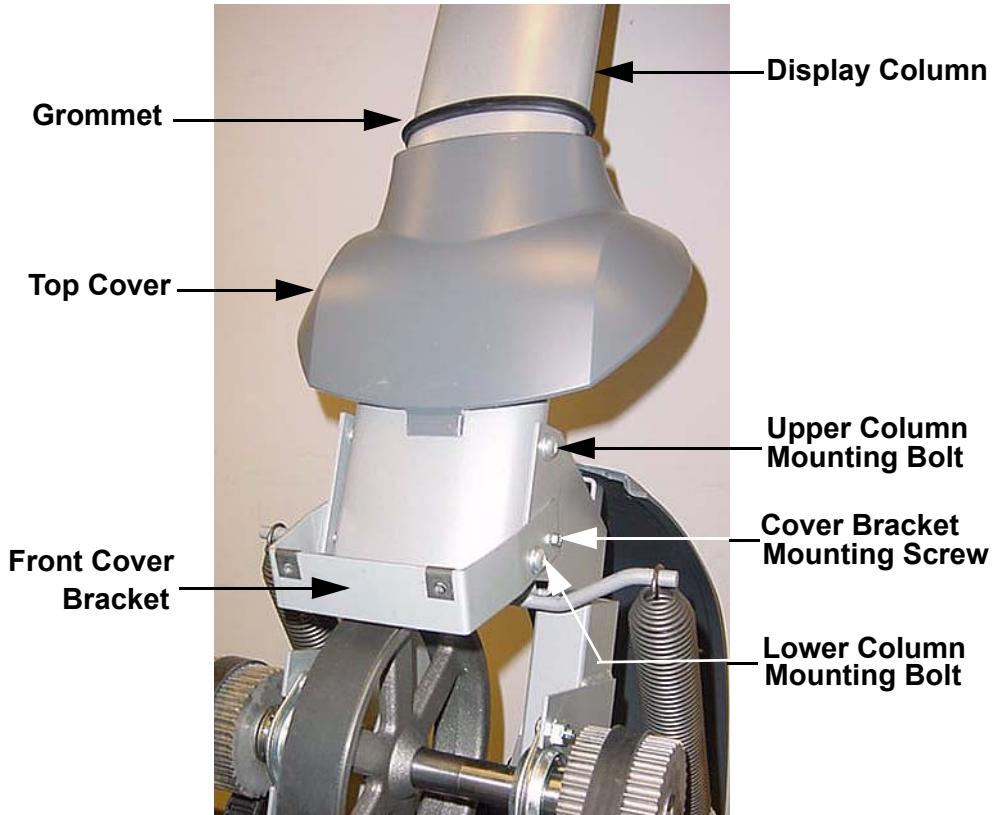
Diagram 7.17 - Upper Data Cable



6. Remove the four screws that fasten the display housing to the display column. See Diagram 7.18. Carefully, remove the display housing from the display column while extracting the data cable and heart rate cable from the display column.
7. Remove the two front cover bracket screws. See Diagram 7.19. Remove the two lower column mounting bolts and remove the front cover bracket from the climber.
8. While supporting the display column, remove the two upper display column mounting bolts. Remove the display column from the climber.
9. Slide the top cover and grommet off of the display column.
10. Slide the grommet (with rounded edge upward) and the top cover onto the replacement display column.

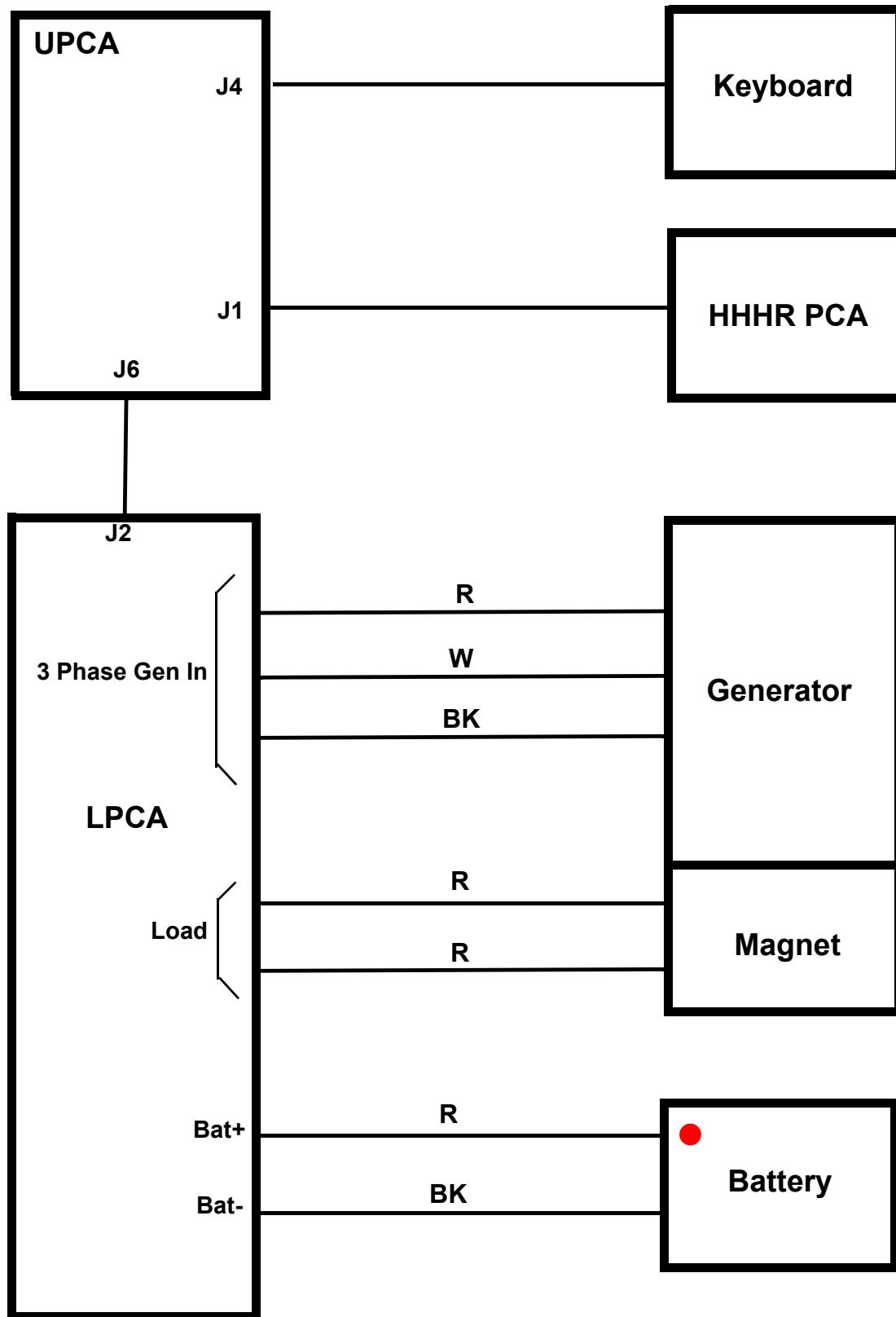
Diagram 7.18 - Display Housing Mounting

11. Set the display housing near the upper end of the replacement display column and feed the heart rate cable into the display housing and out of its access hole where the vertical handlebars will mount, See Diagram 7.9. Feed the data cable into the display column and out of its access hole as shown in Diagram 7.17.

Diagram 7.19 - Display Column Mounting

12. Fasten the display housing to the display column with the four screws removed in step 6.
13. Fasten the rear display cover to the display housing with the screw removed in step 4.
14. Set the replacement display column at its mounting position. Hand start, but do not tighten, the two upper display column mounting bolts removed in step 8.
15. Set the front cover bracket in its mounting position. Hand start, but do not tighten the front cover mounting bracket screws.
16. Hand start the two lower display column mounting screws. Securely tighten the two upper display column mounting screws, the front cover bracket screws and the two lower display column mounting screws.
17. Connect the upper data cable to the mid-point connector. See Diagram 7.17.
18. Slide the top cover down the column so the tab on the top cover fits into the front cover. Slide the grommet down into the top cover.
19. Set the left handlebar on its lower rear mount and slide the upper end of the handlebar into the handlebar clamp.
20. Set the right handlebar on its lower rear mount and slide the upper end of the handlebar into the handlebar clamp.
21. Fasten the lower rear handlebar with the bolt removed in Procedure 7.14, step 3.
22. Slide the handlebar boot down into position and replace the endcap with the bolt removed in Procedure 7.14, step 2.
23. Set the vertical handlebar assembly on the left and right handlebars as shown in Diagram 7.9. Connect the hand held heart rate (HHHR) connectors.
24. While rotating the vertical handlebar assembly into its mounting position, feed the hand held heart rate cable into the access hole in the upright column.
25. Hand start but do not tighten the two handlebar clamp bolts removed in step 2. Hand start but do not tighten the two vertical handlebar bolts removed in step 1.
26. Verify that both the left and right hand handlebars are fully inserted in the handlebar clamp. Securely tighten both handlebar clamp nuts. Then tighten both vertical handlebar bolts.
27. Replace the left hand, right hand and rear covers per Procedure 7.1.
28. Test the C776i per Section Four.

Wiring Diagram 8.1 - C776i



Block Diagram 8.2 - C776i

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